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CONTENTS

FARM MANAGEMENT AS RELATED TO CONSERVATION PROGRAM[1]

DISCUSSION BY E. H. REED
SOIL CONSERVATION SERVICE

The operations program of the Soil Conservation Service covers a large number of widely distributed and varied farm management problems.

The plan is to establish demonstrations in representative areas, so that farmers in the surrounding territory may observe the methods and results, and adopt them on their own farms. Most of the demonstrations are located on privately-owned land. The Government enters into a five-year cooperative agreement with the farm owner. It specifies what is to be done, when it is to be done, who is to do it, and the methods to be used.

Since this is a demonstrational program, its success depends, to a large extent, upon its economic soundness and practicability. Faulty economic planning might therefore prevent the establishment of improved soil conservation practices. It thus behooves us, in working out the soil conservation program, to see that the planning, as well as the methods, are sound and practical. It is possible to have a program which will conserve soil and water without, at the same time, having one which is economically sound and feasible. On the other hand, it is possible to have both of these combined in one program. Therefore, in working out the individual farm plan, it is the aim to develop a program which will afford the maximum immediate income, and at the same time maintain and conserve soil productivity, so that this income may be maintained over an extended period of time.

Since we are planning a program which the individual farmer

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[1] The following discussions are abstracts of papers read before a Round Table Session at the Twenty-seventh Annual Meeting of the American Farm Economic Association, Chicago, Illinois, December 29, 1936. Prepared by W. J. Roth.

is to follow for the next five years, and which we are recommending be followed generally in the community for a more extended period of time, it puts upon us a grave responsibility. It also raises some extremely fundamental farm management problems.

In most areas, especially in the older areas in the eastern part of the United States, the type of farming has been arrived at largely through long years of experience, using the method of trial and error. In these areas, there is generally some very fundamental economic basis for the present type of farming. To make radical changes, therefore, might lead to serious consequences.

Even though there may be no fundamental economic reasons why a change in type of farming could not be made, there may be economic reasons why such change could not be made immediately. While we feel that radical changes should not be made in type of farming, it may be desirable and practical to make radical changes in methods of farming, or in farm layout.

The problem of land use arises. If we are to conserve soil, is it necessary that shifts be made in land use; and if so, what shifts should be made? Erosion losses may be reduced either by retiring sloping lands from clean-cultivated crops to erosion-resistant crops, or by retaining these slopes in cultivation and using erosion control methods, such as contour farming, strip cropping or terracing. The question, therefore, may be whether to make radical changes in crop acreages and use present methods, or whether to make less marked changes in acreage and more marked changes in methods. If we retire cultivated land to meadow, pasture, or forest, we have the question of the relative net income from these uses. What are the net income possibilities of well managed forest or pasture lands, and how does this compare with net income from cultivated land? To what extent will the retirement of cultivated land to permanent meadow, pasture or forest reduce the net income?

The decision as to how far to go in shifts in land use will depend upon the relative net returns from cultivated crops, pasture or woods, upon the value of the land and upon the cost of establishing erosion control measures.

After we have decided on what land we will use for cultivated crops, further questions arise as to the cropping plan to be used on this crop land. We must view this both from the short and long-time viewpoint. From the short-time viewpoint, continuous corn or cotton may give us the largest net income; however, such a system will quickly exhaust soil fertility, and will lead to serious erosion. Over a longer period of years, a rotation which

is made up in part of close-growing crops and legumes will reduce erosion losses, will better maintain soil productivity, and in the end be more profitable.

We thus see that when we attempt to outline a definite, detailed five-year program for a farm, we are confronted with a number of perplexing farm management problems. I have mentioned only a few of these. Certainly many others must be considered in any economically sound plan.

We cannot hope to obtain definite answers to all of the problems for some time to come. However, we cannot sit supinely by waiting for complete and final answers to all the problems while our soil resources are being depleted. Additional research is sorely needed on many of the economic aspects of soil conservation.

Discussion by M. H. Cohee
Soil Conservation Service

During the past decade the facts concerning the serious effects from erosion have been stressed and are now becoming recognized by the general public. The time for reemphasis of these facts as a forerunner to but without action toward correction of the problems has now passed. Well-planned land use and management programs must now be introduced, in order to insure continuation of a permanent agriculture in America.

Conceding that the management of our farm lands has been improperly planned in order to assure protection of the soil, what is the solution? Economists, political scientists, and sociologists, must determine why the farmer has failed to conduct his agriculture in the public interest, and what means society can use to induce him to do so.

At the present time the Federal Government is attacking the erosion problem on two fronts: First, through a program of education by which the physical problems of erosion control are demonstrated; and, secondly, through a program of benefit payments for soil conservation. In this paper, I shall make no effort to discuss the latter, i.e., the Agricultural Conservation Program.

The erosion control program seeks to establish methods of farming which will: (1) Maintain or increase the absorptive power of the soil and thus aid in preventing run-off; (2) protect steeper slopes by forest or grass which will hold the soil in place; (3) decrease the speed at which the surplus water runs off fields and thus decrease the erosive or cutting power of this water; (4) provide cover on areas subject to wind erosion that will pro-

vide returns and prevent erosion; (5) heal gullies already formed and prevent the concentration of run-off water on unprotected slopes, so that new gullies will not be started; and, (6) maintain or increase soil fertility. All methods of farming with these objectives must be carried out in such a way as to allow farms to be operated as profitable organizations under our present social and economic systems.

In order to accomplish these objectives within the frame work of private ownership, it is necessary that economic as well as physical factors be taken into consideration. If a true picture is to be obtained, it is manifest that farm management and economic information must be made available for correlation with soil, engineering, woodland, and agronomic data—in fact, all must be considered together to arrive at the most workable and practical plans for any area that might be used as a demonstration for erosion control.

Application of an erosion control program to the individual farm demands interpretation of the general plans for the area, but with modifications applicable to that farm. Proposed changes in land use and introduction of mechanical phases of the program, such as terracing or strip cropping, cannot be made or introduced irrespective of the type of operator or the tenancy situation for each farm. Usually farmers of a given area in utilizing all their available resources to the best advantage will produce those crops and have those livestock enterprises most suitable for meeting the conditions existing. The general farming and livestock type of farm will, by and large, be operated according to a balance between livestock units and feed units. Consequently the starting point on development of an erosion control program for the farm is to learn this situation and then balance new land use plans against the present and expected livestock units. Possible changes in feeding programs will need consideration as well as the physical units of the various enterprises on the farm.

It does not follow, as is so often thought, that all changes in the cropping program necessitates even short-time or long-time hardships. To be sure, for the cash grain farmer decreases in cash crops and increases of hay and pasture crops mean considerable loss of income unless there are opportunities to expand into additional enterprises. However, for the farmer who markets a great share of his crops through livestock, any change in his cropping program will result in one of two immediate necessary changes: (1) As to the number or kinds of livestock; or (2) as to the feeding program of the livestock.

If introduction of correct feeding practices and pasture management phases of the farm program can be successfully started in order to make the best utilization of the feed crops, it seems reasonable to expect that the changes in cropping programs will be an aid to the farmers. Costs of production of hay crops versus corn or small grain crops on a feeding content basis have been well established by many experiment stations and show definitely that it is cheaper to produce protein and digestible nutrients through alfalfa hay than by corn and small grains; however, the effects of different amounts of feed on the total farm organization are not so certain.

Programs started by the Soil Conservation Service are relatively new. Therefore, little final data are available to serve as a guide to show the extent of reduction of soil losses under actual field conditions. It is the feeling of those closely associated with the program, that it brings about a net benefit to the farmers. If it only maintains the soil and fertility, without causing serious monetary expenditures, both out-of-pocket and as representing power, labor and equipment charges, the known benefits will more than offset these charges.

In conclusion, it seems logical and practical to believe that farm organizations can be changed in order to aid in erosion control and at the same time increase the financial possibilities of the farmers both from a short-time point of view and from a long-time point of view. Before the introduction of erosion control measures, carefully planned farm management surveys should be made for an area. Furthermore, when introducing erosion control measures to an individual farm, general recommendations for an area must often be modified to meet the particular conditions found on the farm.

DISCUSSION BY P. E. JOHNSTON
UNIVERSITY OF ILLINOIS

Since there were but few farmers who followed definite rotations even before the advent of the Agricultural Conservation Program, the term rotation will be used in this discussion in a broad sense and will deal with the impacts of the program on the use of tillable land in Illinois.

The program in Illinois has been influenced by soil types, topography, cropping systems, price outlook, chinch bugs, livestock practices and particularly the weather, and it is evident

that there were fundamental differences in the effect upon the different farming type areas.

The program has had very little permanent effect on land use since each year's land use has been based on conditions existing at planting time rather than upon a long-time cropping plan. Those who followed a definite rotation prior to 1934 have not done so since because of two years of drouth and changes in rules between planting and harvesting time. This has not motivated farmers who had definite rotations prior to 1934 to change over to some other type of rotation. Those farmers who had a proper balance between corn, wheat and legumes prior to 1934 have had an unbalanced rotation since and many who could not qualify for payments under a program with an historical base had a higher percentage of their crops in legumes than did their neighbors who did qualify.

The setting aside of contract acres in 1934 caused an increase in the number of fields and a decrease in the average size of fields which affected rotations and operating expenses. There was a decided decrease in corn and oats acreage, while idle land, wheat, soybeans, and legumes increased.

HARVESTED ACREAGES OF SELECTED CROPS IN ILLINOIS, 1932–36

Crops	1932	1933	1934	1935	1936
	thousand acres	thousand acres	thousand acres	thousand acres	thousand acres
Corn	9,817	8,835	7,805	8,273	9,183
Wheat	1,669	1,874	2,080	2,074	2,041
Oats	4,394	3,999	2,991	3,799	3,495
Soybeans	315	290	501	1,213	1,100
Tame hay	2,391	2,356	2,720	2,570	2,656

The 1935 program was responsible for a smaller corn acreage, for the state as a whole, than in the base period but a larger acreage than in 1934, and contributed to a large increase in soybean acreage in central Illinois.

The 1936 program had much less effect on cropping practices than either of the preceding years.

The oats acreage in Illinois has declined steadily since 1932, the program being responsible for only a part of this decline while there has been little change in wheat acreage. In areas most seriously affected by drouth, the benefits payments were especially important, particularly in 1934.

Under Illinois conditions there can be no material increase in legumes without the use of limestone. A program which motivates farmers to apply limestone will be of maximum assistance in solving the soil maintenance problems in the state. With assur-

ance that the rules of the program would be uniform over a period of years, many farmers would adopt new and definite rotations containing an increased acreage of legumes.

The present high price of corn and soybeans, the failure of legumes seeded in 1936, and the scarcity of feed in the drouth areas will encourage an increase in the acreage of grain crops for 1937 in spite of the rewards which are promised for increasing the acreage of soil conserving crops under the Agricultural Conservation Program.

DISCUSSION BY PETER NELSON
OKLAHOMA A. &. M. COLLEGE

Within the limits of physical conditions for production, the character of the farmer and the availability of markets, farming has been established largely by trial and error process. Established systems frequently are defective from a conservation viewpoint, but usually represent quite closely the possibilities open to the farmers. Unfortunately, what is regarded as desirable conservation practice does not always coincide with the farm practice yielding highest farm income. Hence, systems of farming, as a result of economic and natural forces, are more nearly determined for farmers than by farmers.

Preliminary data from two types of farming areas, the wheat and the rough eroded areas, are indicative of the situation conservationists face in Oklahoma. In the wheat area, crop specialty (wheat) farms show a labor income three times greater, return twice as high a rate on the investment, are twice the size, and yet require only two-thirds as much labor as livestock specialty farms. Wheat farmers received $1.32, livestock farmers $.27 per hour of man labor. In the rough eroded area, tenant farmers received the highest labor income, had the largest cotton acreage, milked the fewest cows, had the smallest legume acreage, and had next-to-the-largest land acreage but next-to-the-smallest acreage terraced.

The soils in Oklahoma are highly susceptible to gully washing and general erosion. Some areas with light rainfall are subject to wind erosion, but this problem is in capable hands and will doubtlessly be solved in time to prevent their abandonment for farming.

Level terraces, farming on the contour, and strip cropping are erosion control measures recommended in the western gently

sloping part of the state. In the rougher areas, particularly in the eastern sections, the most important measure is gently sloping terracing, to remove part of the torrential rainfall with minimum soil washing; contour farming and strip cropping are also recommended. Phosphorus and lime are required in many areas to grow leguminous crops. In the western portion, fertility is not of immediate importance, but terracing would increase productivity of lands, at least temporarily, through conservation of moisture. In eastern Oklahoma, fertility is an immediate problem. Here terracing of steeper slopes will no more than maintain productivity and is likely to decrease it since much of the top soil above the terrace will have been removed and available moisture is not increased. On the whole, then, the immediate prospect for Oklahoma farmers under the conservation program seems to be reduction in productivity and farm profits, unless the loss from reduced productivity is offset by some form of benefit payments.

Ultimate economic conservation practices of soil conservation for Oklahoma cannot be determined at this time. Soils, engineering, and crop specialists have succeeded in training farmers how they might conserve their agricultural resources if economic forces permitted. The program will undoubtedly step up the development of erosion control and increase use of soil building crops, but there may be no improvement in fertility or profits unless a better knowledge of conservation is secured or a major shift in market outlets forces a long-time change in price relationships.

DISCUSSION BY G. A. POND
UNIVERSITY OF MINNESOTA

The impacts of the Agricultural Conservation Program on crop rotations, soil fertility, efficiency in farm operation and farmers' earnings cannot be measured objectively at this time. Due to the extreme heat and drouth, farmers in many states have not reacted to the program as they might have done under more nearly normal weather conditions.

This discussion is confined to Minnesota which may be considered representative of those states in which soil erosion is a relatively minor problem. Any shifts in the cropping system designed to promote a wiser use of soil resources are not handicapped by the cumulative effects of past mistakes. Natural and economic conditions are relatively favorable to the production of soil building crops, especially the deep rooted legumes.

The present program provides in general for a sufficient crop adjustment to make possible desirable rotations that would take care of the fertility and soil conservation problems. To fit individual farms, there should be more elasticity; a ratio between soil building and soil depleting crops and their proper rotation, rather than a fixed acreage or percentage shift.

The important question from the standpoint of both the farmer and the national program maker centers around the effect of these crop shifts on farm production and farmers' earnings. This increase in soil building crops, principally legumes, would over a long period of time result in some increase in yield of soil depleting crops on the reduced acreage. Even without increased yields, increases in total digestible nutrients may arise from crop shifts. In much of the state such crops as alfalfa produce more digestible feed per acre than do the soil depleting crops they displace.

A study of the reduction in soil-depleting crops in Minnesota in 1936 indicates that the principal reduction has been in small grain crops. Corn acreage has been reduced but little and in many cases has actually been increased. In most of Minnesota, alfalfa will be the principal hay to be increased with sweet clover in the northwest counties and red and alsike clover on soils of limited lime content. These same crops, especially sweet clover, would predominate in the pasture crops to be increased. If this shift to legumes was accompanied by a shift to the more productive feed crops within the soil depleting group, it is possible that the increase in feed production might be as high as 20 or 25 percent without assuming any increase in yields.

Increased feed production will obviously result in an increased production of livestock and livestock products; the roughage consuming type of stock to be most affected. The proportion of roughage in the ration may be increased and the concentrate ration decreased, resulting either in less total production per animal or the production of a lower quality product. On the other hand, the high protein content roughage may maintain production.

Hay crops require as much or more labor than small grain crops but less than corn. Pasture crops require little labor and reduce feeding labor. Large increases in legume hay production would alter labor program peaks. Increase in dairy cattle would greatly increase labor requirements, especially when crop demands are low. Any increase in the labor bill would be largely offset by reduced power costs. Machinery costs would be affected

but little. Seed cost would be lessened, and cash outlays for twine and the like would be reduced. Some additional shelter costs might be necessitated. In general, it seems that the shift from soil depleting to soil conserving crops would not result, once it was carried out and farm reorganization completed, in increased costs of operation. There might be reductions, especially in unit costs of production.

That the present program has increased the net earnings of Minnesota farmers is generally conceded. Compliance payments in most cases exceeded the value of any crop that might have been sacrificed. In a year of adverse weather conditions when crops would have been a partial or total failure, reducing the acres of crops can hardly be considered a sacrifice. In other words, this year's payments served in a measure as crop insurance.

The full effect of the program will not be registered until the shift from soil depleting to soil building crops has been completed, the latter have come into production, and livestock adjustments have been made.

The final answer as to how the Agricultural Conservation Program is, in the long run, to affect earnings of Minnesota farmers resolves itself largely into a question of price. Will increased production depress prices more than costs are reduced? Will the production of those products which are to be increased in Minnesota also be increased in other states to the extent that serious price reductions will result? Will consumer outlets, domestic and foreign, be developed to absorb this expected increase in production at a remunerative price? If prices of farm products do decline as a result of increased supply, will the payments to farmers for compliance with the program be sufficient to offset the resulting decrease in income? And finally, will the nation as a whole be sufficiently advantaged by this conservation program to justify the use of public funds for such payments?

PRICE ANALYSIS AS A GUIDE IN MARKETING CONTROL[1]

E. W. Braun
Agricultural Adjustment Administration

When a group of agricultural producers, either with or without governmental assistance, modify the marketing of the commodity or commodities that concern them, they do so for the purpose of increasing their net income.

This paper deals primarily with programs in which agricultural commodity groups and the government are cooperating for the purpose of exercising some regulation of marketing as applied to fruits and vegetables. An effort is made, however, to treat certain principles that should be applicable to other commodities as well.

The Agricultural Adjustment Act of 1933 provided that the Secretary of Agriculture might enter "into marketing agreements with processors, associations of producers, and others engaged in the handling of any agricultural commodity or product thereof. . . ." These provisions of the original Agricultural Adjustment Act were later modified through amendment but were not stricken by the decision of the United States Supreme Court, rendered on January 6, 1936, invalidating the production control and processing tax aspects of the Act.

Marketing agreements do not contain processing tax or production control features. They deal with the marketing of the commodity after it is produced and available for market. Marketing agreements are binding upon signatory handlers. Under certain referendum conditions, "Orders" to carry out such agreements may be issued by the Secretary of Agriculture, which are binding on all handlers of the same class handling the complicable to fruits and vegetables and milk (excluding canned fruits and vegetables).[2]

Since the passage of the Agricultural Adjustment Act, a number of marketing agreements have been entered into and a number have been terminated. In practically all cases the agreements are or have been accompanied by a parallel order. These agreements are industry programs and provide for industry committees who make recommendations subject to the approval of the Secretary of Agriculture.[3]

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[1] The following discussions are abstracts prepared by C. F. Sarle, of papers read before a Round Table Session at the Twenty-seventh Annual Meeting of the American Farm Economic Association, Chicago, Illinois, December 29, 1936.

[2] Agricultural Adjustment Act as amended, 74th Congress, August 1936, Title 1, par. 2, Sec. 8c.

[3] Public hearings must be held on proposed agreements and proposed orders.

Inasmuch as recommended regulations are subject to the Secretary's approval, it places an important responsibility upon administrative heads responsible for the administration of these programs. Important administrative decisions are necessary at the time the agreements are drawn and again during the active operations of the agreement. Because of the nature of the decisions the administrative officers seek economic counsel. During the development stages of a program it is necessary to determine the course of prices of the commodity in question, the geographic location of its production, the scope of its distribution, the season of marketing, the marketing practices employed, the major factors affecting its price and the degree to which these factors affect its price. The first type of decision in our programs involves such questions as: Can returns be increased by regulating the daily or weekly flow to market? Can returns be improved by withholding low quality or so-called discount sizes of the commodity from the primary market outlet? Can returns be increased by diverting a portion of the regular merchantable volume into other than the regular trade channels? In more specific terms, can returns to growers of oranges be improved by regulating the weekly volume that is permitted to flow to all markets irrespective of grade, knowing that there is considerable latitude in the length of time that oranges can be stored on the tree following maturity? Can returns be improved by regulating grades of the fruit or sizes of the fruit or both? Can the returns to walnut growers be improved by setting aside a portion of the merchantable supply of walnuts and disposing of the diverted supply in either export channels or domestic channels as shelled nuts at a price lower than the primary unshelled outlet?

Once the procedure is put into operation detailed operating decisions must be made. For example, if it has been decided that it is advisable to regulate the weekly flow of citrus fruit, it is then necessary to estimate precisely what that volume should be at a given time: how many cars or how many packages of oranges or grapefruit should move forward to market in the autumn months? In the winter months? In the spring months? And in the summer months? If grade or size regulations are to be adopted, what are the grades and sizes to which the regulations should apply? Should the application be complete or should the application be only in part? If regulations are to apply to the shipment of fresh plums by size groups, which size groups need to be considered? If shipments of watermelons are to cease until terminal market track holdings can be reduced, for how long? If

merchantable walnuts are to be set aside and merchandized from a diversion pool, how many walnuts should be so handled in the best interests of growers? Again if the diversion of the commodity or the export of the commodity is to be encouraged by some form of subsidy or benefit payment, how much should the export subsidy or diversion benefit payment be per unit.[4] Should the diversion benefit payment be graduated? Should the graduations be conditioned upon market price changes in the diversion outlets? In the purchase of commodities for relief distribution, what price per unit should be authorized? When should the purchase be made in order that growers may benefit most from sales made in regular channels?

In order that the economist may be of assistance to the administrative officers with respect to either the decisions as to principle or as to specific detail, it is necessary for him to combine sound theory with price analysis. To be sure, administrative officers do not always follow the advice of economists for various reasons. The economist is only one source of information that administrative officers draw upon. Legal advice and the business or trade sense of industry committees are often not consistent with the advice the economist has to offer. The administrative officer must weigh the advice offered and make his choice. The economist, if he is to be useful, must support his advice with sound theory supplemented by quantitative research. As long as the economist does this, price analyses will be used as a guide whenever marketing regulation is practiced.

As the writer sees it, there are only a limited number of practical ways by which the net income of producers can be increased.[5] The most obvious method is through restriction of the quantity offered for sale under conditions of inelastic demand when the supply available is beyond, in a positive sense, the point of maximum return to growers.[6] The other principal practical method is by raising the grower schedule to a higher level. Under conditions of inelastic demand, restrictive measures and measures to raise the schedule should be combined whenever possible. Under conditions of elastic demand a program most likely to be successful in the matter of increasing gross income is one designed to raise the schedule and direct restrictive measures should not be

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[4] It has been the policy of the Agricultural Adjustment Administration to administer Section 32, Public No. 320, 74th Congress, in conjunction with marketing agreements where practical. Section 32 provides for export subsidies, diversion benefits and purchases for relief distribution.

[5] The reader is urged to refer to a recent comprehensive technical treatment of this subject by Waugh, F. V., and others, the Controlled Distribution of a Crop Among Independent Markets, Quarterly Journal of Economics, Vol. LI, November 1936.

[6] In order to avoid the use of involved phraseology the term 'demand' as it is used in this discussion means a quantity-price relationship measured at the level of prices to growers.

E. W. Braun

RELATION OF QUANTITY TO VALUE UNDER CONDITIONS
OF INELASTIC AND ELASTIC DEMAND
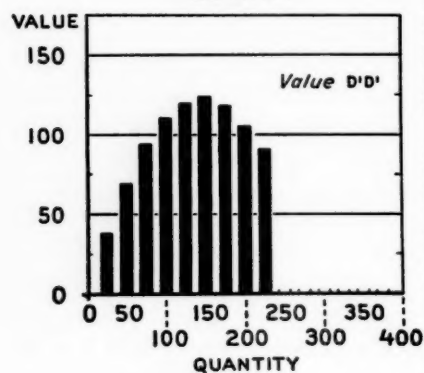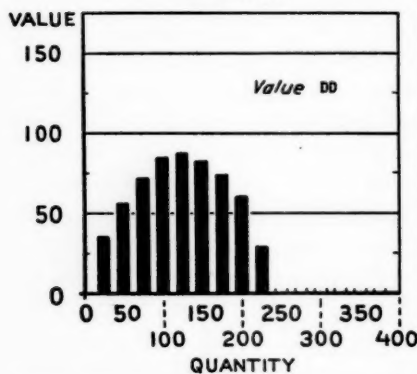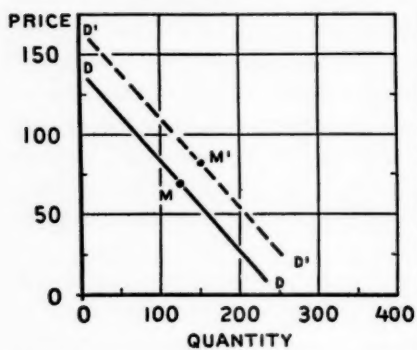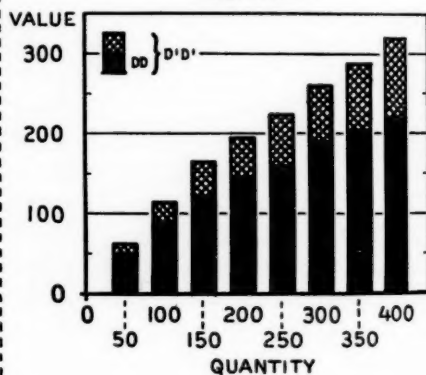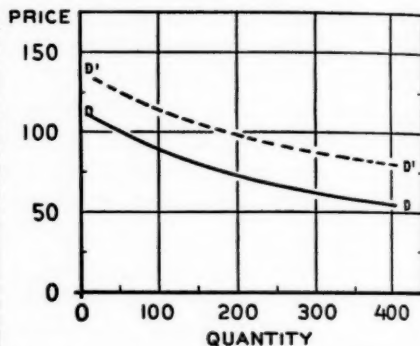
Fig. 1

employed unless such procedure is necessary to raising the schedule by an amount that exceeds the disadvantage resulting from the restriction.

In order to assist in orienting and clarifying our thinking the accompanying diagrams should be referred to. The series of diagrams on the left half of Figure 1 represent in part a condition of inelastic demand. The line DD may be taken to represent the grower price-supply relationship through a given period of time. The primary interest of growers as a group lies in the total value of the product, namely, price times quantity which is shown in bar form just underneath the line diagram. It should be noted that value magnitudes derived from the line DD increase markedly as quantity increases until 125 units is reached. Beyond that point, as quantity increases value decreases markedly. Under these conditions it would be advantageous to growers as a group to restrict to the point of maximum value assuming even that they received nothing for the quantity released by restricting shipments. In actual practice, it is seldom if ever necessary to assume that an excess volume, if segregated from the total volume, offers no source of income. Diverted volume is generally an added source of income. Let us refer to line D′D′ of the diagram. It represents schedule DD raised to a higher level. Value readings derived from this line are markedly greater than value readings derived from DD and increase as quantity increases up to a certain point, beyond which point they characteristically decline rapidly. The highest value point, however, in this case is not at 125 units but at 150 units. Under conditions, therefore, described by line D′D′ it would not be advantageous for growers as a group to restrict below 150 units, assuming no return for the volume in excess of that. It should be remembered that under conditions described by line DD the maximum value appeared at 125 units. In order to make the diagram somewhat more realistic for most of our fruit and vegetable crops the quantity magnitude may be taken to represent either thousands of tons, millions of pounds, thousands or millions of packages.

Under conditions of elastic demand, greatest benefit is derived either by pushing sales volume to a marked extent for certain periods, if that is practical, such as selling a high percentage during a brief part of the season and selling the remainder over a longer period of time,[7] or raising the schedule through collective bargaining power or decreased handlers' charges or decreased

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[7] Depending on the slope or the elasticity.

transportation charges, or some conscious influence upon the effective demand. These c̶ ̶ions are clarified by observing the value magnitudes fo̶ ̶ ̶ quantities as represented in the bars below the line di̶ ̶m o̶ ̶e right hand side of Figure 1. Value increases throughou̶ ̶e r ̶ge here shown from readings derived from line DD. Values increase even faster when derived from line D′D′. Line D′D′ represents an increase from line DD of a flat amount per unit. These diagrams serve to illustrate how important it is for an economist to determine the slope of the quantity-price relationship and the level of that relationship. To do this the best possible price analysis in the time available is essential. It has been the writers experience that in cases where reasonably accurate data have become available historical price changes of the commodity under question can be accounted for by some measure of (1) the supply of that commodity, (2) the supply of the primary competitive commodity or commodities, and (3) changes in the level of income of consumers (as a separate variable).[8] Sometimes the quality of the commodity, when a measure of quality can be had, is also significant. The writer believes that these factors, together with the business or trade sense of those having long experience in the industry, are invaluable guides for decisions that must be made in any program of marketing regulations.

Price analysis also becomes an important instrument in facilitating the collection of accurate basic information for the commodity under consideration. Incomplete data or data that are not comparable should not be used by an analytical economist in arriving at important conclusions unless he is aware of the extent of the incompleteness or lack of comparability. A greater effort is made to assemble comparable and complete basic facts for those programs in which price analyses are employed than for programs for which price analyses are not employed. This, therefore, is an important by-product of price analyses.

Comparable and complete basic facts and price analyses derived from them are of considerable use in connection with negotiations between industry (commodity) representatives and government representatives. It has been the writer's observation that conferences involving important negotiations frequently adjourn with little, if any, accomplishment when neither basic facts nor

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[8] The writer prefers to use measures of changes in consumers' income as a separate variable rather than making the adjustment by dividing the price of the commodity by an index of consumer income or index of the general price level. The division process of adjustment assumes a one to one relationship. If treated as a separate variable the relationship is determined by the regression line without any fixed assumption.

analyses are at hand. If, on the other hand, basic facts and analyses are available, opinionated differences are likely to disappear entirely or narrow appreciably, thus paving the way for some constructive achievement. Accurate basic facts are also very valuable in connection with findings of fact which the Secretary of Agriculture is required to make. The importance and need for this has been clearly set forth in a recent United States Supreme Court decision in the St. Joseph Stockyards case.[9] Findings of fact are essential in compliance or litigation proceedings.

Administrative heads and commodity representatives are also vitally interested in the question of what effect a given course of action relative to marketing will have upon subsequent supply produced. In formal terms it is what is known as "elasticity of supply" or "flexibility of supply." The question resolves itself to: "What is the degree of supply response to a given price stimulus." This need not concern us much in the case of tree fruits for which the bearing life of the tree is a matter of ten years or more. For crops such as these plantings, other than replacements, are more likely conditioned by trends and by competing crops than by short time influences arising from marketing agreements. Cultural improvements stimulated by marketing agreements would be welcomed. In the case of annual vegetable crops it is, however, another matter. Here supply response may be sensitive. Where this is true marketing agreements and Section 32 arrangements need to be applied with caution, perhaps only to assist in correcting critical situations arising from unduly high yields.

Before concluding one further point should be mentioned which is of some importance in the consideration of marketing regulations. When prices and quantities and other factors are related to each other averages or totals are used. An average price figure in tabular form is represented by a single number. When wholesale prices are very low and marketing charges are relatively high it becomes especially important to examine average prices in more detail. When the price structure is examined in detail something of the character such as shown in Figure 2 becomes apparent. A few sales were made at relatively high prices, a large number of sales were made at medium prices, and a few sales were made at relatively low prices, giving a frequency distribution such as shown in the diagram. Assuming, in this particular instance, that the marketing charges such as package, packing, grading, transportation, and selling costs amount to $1.80 per

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[9] 298 U. S.—56 Supreme Court Reports 720,

E. W. Braun

CHARACTERISTIC FREQUENCY DISTRIBUTION OF PRICES OF A COMMODITY IN A GIVEN MARKET WITHIN A GIVEN TIME
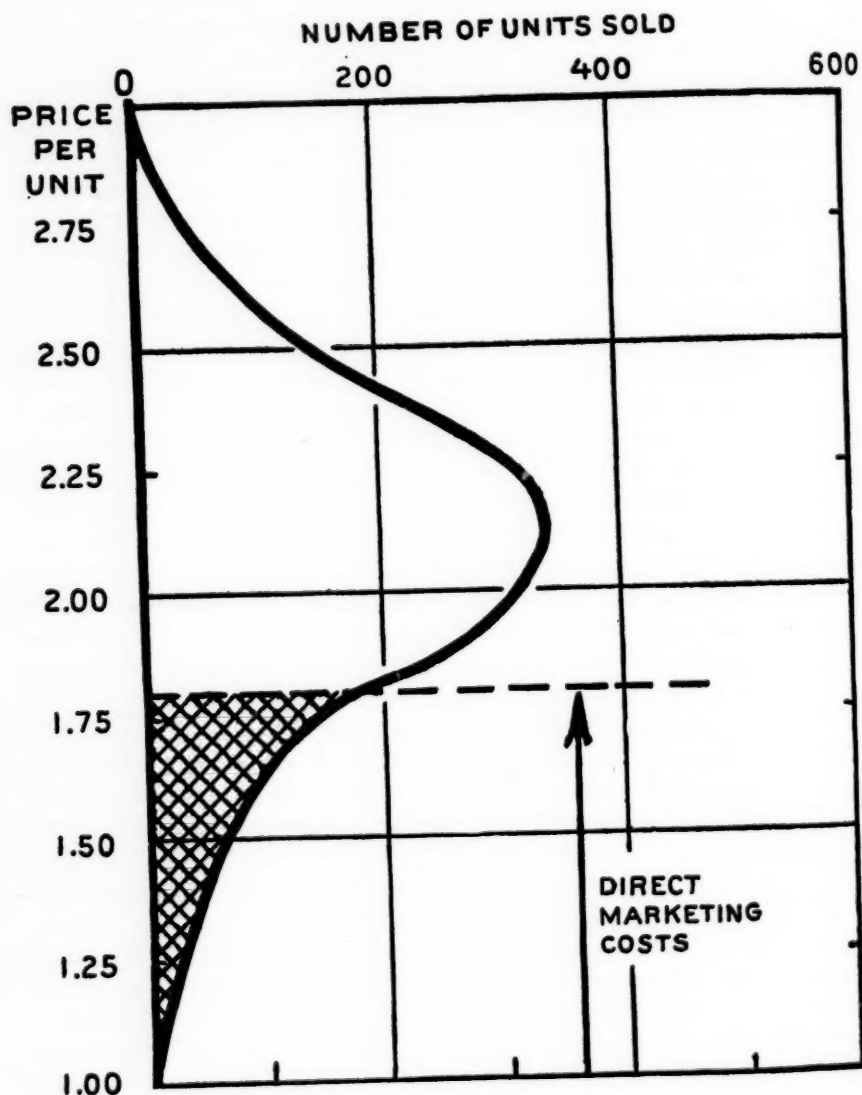
FIG. 2

unit, it becomes apparent that the portion of the sales represented by the shaded area brings a net loss to the producer. This represents approximately 18 per cent of the total units involved. If daily sales show results such as this, it is reasonably safe to assume that the low prices are a result of either low quality or discount siz s of a commodity. If this condition is found it becomes ap arent that withholding low quality or undesirable sizes from the market, either through elimination or by diversion to some other outlet, offers an opportunity of greatly benefiting producers, assuming that it is impractical to reduce direct cash outlay marketing charges.

In conclusion it may be said that the major usefulness of price analyses as a guide in marketing regulation lies in the extent to which they reveal or describe and clarify the interplay of economic forces as they apply to a specific commodity. Price analyses can contribute to the wisdom of administrative decisions, serve as an educational medium and contribute to findings of fact necessary in compliance proceedings.

THE USE OF CORRELATION IN PRICE ANALYSIS

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Our current attitude toward correlation constants, whether of mathematical or of graphical derivation, is one of skepticism, or at best, of uncertainty. With a decade or more of none-too-successful economic forecasting behind us we rightfully wonder if a high correlation coefficient or a low standard error of estimate is really any basis for assurance that our forecast, or inference as to the future, will be sufficiently correct for practical needs. Our inferences as to the future are being based very largely upon our own personal opinion of what "common sense" consists and not upon a thoughtful, but purely objective, consideration of the data as a sample from an infinite universe. Probability, in its precise sense, is seldom a factor in our inferences.

Now obviously there is nothing wrong in thus basing a forecast upon what our wits suggest. We must remember, however, that such a forecast is subject not only to our errors of judgment but also to those of sampling. That we have ignored the sampling aspect of our problem in no way eliminates sampling errors; we have merely chosen to know nothing of their size.

Other sciences have found the accurate application of statisti-

cal inference essential to progress beyond their initial develop-
ments. Economics, too, will discover this necessity. I think much
of our personal hesitancy to depend upon the rigorous use of
statistical inference is due to our past failures with it. These
failures, however, were due in large part to a rather widespread
confusion as to the place of correlation in price analysis, and as
to the conditions under which its use is satisfactory. We will
consider these two points in some detail.

For the purposes of this discussion, let us first very briefly
define a price analysis as a statement of causal relationship,
using "causal" rather loosely in its practical, rather than in its
philosophical, sense. It states that variations in price are due,
in specified amounts, to variations in certain causal factors. While
non-causal analyses are often of interest we are not concerned
with them at this time. It is essential that our statement clearly
indicate whether the analysis represents an untested hypothesis
or, on the other hand, whether the data it utilizes may be used to
test its adequacy. Obviously we can be little more than curious
about an untested analysis while we may place some reliance
upon one which can be successfully tested.

There are three fundamental steps in the construction of a
price analysis. First we develop an *a priori* basis for a causal
relationship. Next we calculate what experience would be ex-
pected if this relationship were, in fact, the true one which had
operated during the period studied. Finally we compare this
expected experience with that which actually occurred. If the
discrepancy here is small, we have no reason to doubt the truth
of our *a priori* hypothesis. If the discrepancy is large, however,
and the facts are not in dispute, our hypothesis is evidently inade-
quate and may even be completely erroneous. Just how big must
a discrepancy be to be "large"?

The basis for our answer is provided by the theory of proba-
bility, using the concept of sampling. By sampling we mean that
we will regard each observation as but one of many that might
have occurred at that particular time. Thus, in a throw of a single
die a "two" may turn up, but it is only one of six events that
might have happened. We do not say that at that time a "two"
was the only possible throw with that die, and therefore the
"true" value. We recognize that we have a sample from a parent
population whose mean is 3.5. The idea is not changed, either,
if we threw a loaded die since this would merely be equivalent
to sampling from a population of a different shape than before.

The loaded number would be most likely to occur but other numbers would still show, though not so often.

Economists rather hesitate to consider a price series in the same light, however. They argue quite plausibly that once the price for the day, month, or year is made, the event is over and that there is no opportunity to duplicate conditions and so to arrive at another price as we can do with the die. Now that is just the point to remember—we cannot exactly duplicate the conditions of the die throw either. Try as hard as we may to arrange similar circumstances all we really do is to attempt to arrange that any particular condition shall have the same opportunity to occur at any throw. If we succeed in this, our sample conforms to the requirements of what Yule has called "Simple Sampling." If we do not succeed we still have a sample, though we cannot make accurate inferences from it as easily as from the other one. The only essential difference, in this respect, between an economic time series and a series which is admittedly of a simple sampling nature is that the economic sample completely fails to comply with the requirements of simple sampling. It is, however, still a sample from some, and possibly changing, parent population, though drawn in a very complicated manner. This complication prevents us from using our ordinary formulas in estimating the probability of occurrence of our economic sample but it does not justify us in denying the existence of such a probability. The probability exists but, in general, we do not know how to estimate it.

Our problem in appraising the discrepancy between the sample of actual prices and the prices expected in accordance with the hypothesis is purely one of sampling. The actual price sample could have come from any of an infinite number of parent populations. Our research is of little value if we cannot form some idea of which one it did come from. If we lack a notion as to the nature of the parent population we can hardly make accurate forecasts regarding the occurrence of any particular sample from it in the future.

If we have used Least Squares procedure in our calculations and *if* our hypothesis is true, the population specified by the correlation constants (and from which our expected prices were gotten) is the one the sample of actual prices most likely came from. The probability is less that it came either from a population with steeper regression lines or from a population with exactly level regression lines. We are particularly interested in this latter

sampling probability because that is the probability that our hypothesis is inadequate or perhaps wrong and that in fact the variations in the factors we are studying are not causes of price variation. When this probability is less than .05 the data used offer no reason to doubt the truth of the hypothesis regarding the parent population from which our price sample was drawn. We may accept this hypothesis subject to testing again when more data become available. When a number of these tests are satisfactorily met our confidence that the hypothesis is true increases. When the probability exceeds .05, however, we ought to be doubtful of its truth. Our attitude should be that, while it may be true, the data are not sufficiently extensive to demonstrate this beyond reasonable doubt and that it is not adequate to explain the occurrence of our particular sample of prices.

A convenient measure of the discrepancy between the price sample and the expected prices is the correlation coefficient, either simple, partial, or multiple. It is readily calculated and provides an easy means of determining the probability that the sample could have come from an uncorrelated population. This use of the correlation coefficient in estimating the probability that the sample of actual prices could be a sample from an uncorrelated population may well be considered the essential function of that measure in price analysis. *Correlation procedure is not a means,* except quite indirectly, *of discovering the truth, but only of testing hypotheses as to what the truth consists.* When we use the method in any other manner than this we are using it incorrectly and ought not to expect our forecasts to be within sampling limits. Correlation involves *both* a causal *a priori* hypothesis and an agreement of this hypothesis with fact.

Let us consider now the hypothesis upon which our analysis rests. It must be derived from considerations entirely apart from the data that are to be used in testing its adequacy. If we do otherwise we obviously have no test. It is sometimes advanced as an argument in favor of the graphic correlation method that no regression form is assumed, but that the regression "follows the data." Since the shape of such a curve cannot also be independent of the data, this characteristic is a serious defect in the method and not an advantage, whenever it is required to draw accurate inferences from this curve. We must remember that no sample, however large, can tell us the exact shape of the true relationship.

Our hypothesis should be developed logically from as fundamental and basic a set of assumptions as we can contrive. It is

then a matter of mathematics to convert this qualitative statement into a formal expression of relationship. In this way the shapes of the regression curves follow logically from the basic assumptions and not from the circumstances of the particular sample they are to be tested against. In general we now will know only the type of equation to be fitted, but not the numerical values which completely define it.

We must estimate these latter from our data. By doing this, however, we violate the requirement that our hypothesis be developed entirely apart from the data. Allowance for this is made in our formula for testing the significance of the correlation coefficient by including in it the number of degrees of freedom utilized by the regression system. Where we may evaluate any coefficient in our equation on a purely *a priori* basis, so that we do not estimate it from the data, we need make no allotment for this coefficient. Since our conclusions as to the reality of a correlation may be completely changed by a difference of a unit or two in the degrees of freedom it is essential that this value be accurately calculated. If it is too low we may be deceived into accepting an hypothesis which is in error, while if it is too high we may be led to reject an hypothesis about which the data really offer no basis for doubt.

There are many problems for which we do not feel able to develop an *a priori* hypothesis. Any attempt to do so would be just so much rationalization. We may, if we wish, set apart a random portion of our data and examine the remainder for such relationships as our sample may offer. In this examination we are not principally concerned with inference but only in smoothing the data to find a relationship governing the particular items of the sample. This regression system now constitutes our hypothesis. It is merely a mathematical description of a past record of events.

To test its adequacy we calculate from these exact lines the prices expected comparable to the prices we set apart at the beginning of our study. If the expected prices do not differ significantly from the actual ones the data offer no reason for doubting the validity of the relationship we use, whether we can provide a logical explanation of it or not. If the difference is significant, however, we ought to reject the regression system as being very likely a characteristic of a sample only and not of value in the formation of inferences as to the future.

Turning now from a discussion of the hypothesis to the ways in which we may calculate the consequences of it, there are three

main types. The most widely used perhaps is the graphic method developed by L. H. Bean; less used is the procedure known as the Method of Least Sqares; other mathematical methods are available but are little used in price analysis. It is beyond the scope of this paper to show that only the Least Squares method is satisfactory for the purposes we have indicated.

Having now reviewed the fundamental steps in a price analysis and having indicated the place of the correlation coefficient in it, let us consider the conditions necessary for it to fill this place. Our data must meet three essential conditions—of independence, homogeneity, and normality.

By independence we mean that in each series used each observation shall be independent of every other observation. In most time series this is not so. The price this year tends to remain near the level of the price of last year. Many of the same circumstances which affected last year's price continue in their effect at least part way into this year and thus tend to make similarity of prices. This situation will often prevail, too, even though trend has been removed. It may easily be detected by plotting, in a correlation scatter diagram, the value for one date against that for the preceding date. The dots will tend to form a band across the chart instead of being equally distributed in all four quadrants.

This type of dependence has received the name of "serial correlation" and the correlation coefficient calculated from this diagram is commonly taken as a measure of it. We will only be correct in doing this when, if the correlation between one item and the next is r, the correlation with the second one ahead is r^2, that with the third one ahead is r^3, and so on. This is rather frequently not the case so that formulas utilizing our estimate of the serial r must be used with care.

The effect of serial correlation is to lower our estimate of the variance in the population we are sampling from and to increase our estimate of the correlation in it and also that of the regression coefficient. Our tests of significance, of course, lose all of their value.

This will be clearer if we consider a coin tossing example. Suppose I try to convince you that I can influence the toss of a coin, making heads appear definitely more often than tails. You ask for a test and agree to recognize this ability if I can toss at least 8 heads out of 10 tosses, since the probability of doing this just by accident with a fair toss is only .05. You will hardly allow me to fasten 2 coins to a piece of glass, say, so that if one shows heads the other one will too, and toss this glass 5 times. Only 4 successes

out of 5, done in this manner, would be required to accumulate my 8 heads and this result of 4 out of 5 will happen by accident alone about 20 percent of the time. A significance test, therefore, can only be based upon independent data or upon a reduced number of degrees of freedom. When we ignore this requirement we are led to accept hypotheses which we should doubt or perhaps reject.

Considering now the next requirement in the data we are going to correlate, we will mean by the term homogeneity not so much that the data refer to the same thing throughout the series, which is tacitly assumed, but that the probability of a given deviation from the mean is the same at any point in the series. In time series this is usually not so. The probability of the occurrence of a low value is often distinctly less in some periods than in others. Nevertheless, if any series of our analysis fails to conform to this requirement our hypothesis cannot be tested and we must remain in doubt as to its adequacy. Homogeneity is a foundation requirement upon which our testing procedure, correlation, is based.

The lack of homogeneity may be detected by means of variance analysis. Let us divide a series into three-year periods, say, if we are using annual data, none overlapping. We will want to make two separate tests. First, we will see if the variance between periods is significantly greater than that within periods. If this is so then the chance of a given deviation changes because the mean is not stable throughout the series. Second, if the variance of the standard deviations of each period is significantly greater than the variance we should expect, which is given by $\sigma^2/2n$ where n is the number of years per period, we have evidence of the entrance of some new causal factor during the period, or of a change in the effect of an old one.

Our third requirement, of normality, is not as important as these other two. We require that our data be distributed according to the normal frequency curve. There is no test of normality suitable for small samples. About all we have is a visual impression of the data scattering more or less symmetrically about the mean. Fortunately, in most cases where we have adjusted for independence and for homogeneity we will have approached normality.

There are two reasons for wanting to satisfy this requirement. First, all of our formulas and their practical interpretations depend upon the sample being drawn from a normal population. Second, if we have a normal correlation surface, which is just

a more complicated frequency function for all our variables at once, we will not be bothered by such complications as joint correlation or by curved regression lines. Now if we have such a surface each series, taken alone, will be normally distributed. An obvious departure, then, from normality is evidence that we do not approximate this ideal condition.

In closing I want to remark once again that I have no quarrel with non-inductive statistical methods of forecasting. In many cases our personal stock of experience is a safer guide than such data as we may have. All I am concerned about is that opinions be expressed as such and not under the guise of statistical induction, which connotes an objectivity that our reliance on personal judgment indicates is unwarranted by our information. If we use inductive method in statistics, then we must stay rather close to the plan I have reviewed of an *a priori* hypothesis, tested by the use of a correlation coefficient derived from data which satisfy the requirements of independence, of homogeneity, and of normality.

A GENERALIZATION OF THE THEORY OF IMPERFECT COMPETITION[1]

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In the last decade the growth of interest in the theory of imperfect competition has been so rapid and widespread as to make this field almost the dominant concern of economic theorists. The reawakening of attention to the subject may conveniently be dated as 1926, when Sraffa's important article appeared.[2] The following decade has left a legacy of some dozen treatises and literally hundreds of articles and addresses. The literature is moreover astonishingly universal: for perhaps the first time in the history of economics, leading economists of all western European countries and America have been engaged simultaneously with the same theoretical subject.[3]

The present paper does not attempt a critical exegesis of the specific doctrines advanced in the literature. That would certainly be an unending task, and in large part, an unprofitable one. Here two relatively modest endeavors are made. A few preliminary generalizations are offered regarding the major tendencies manifested in the present literature. The second and major portion of the paper is then devoted to a generalization of imperfect competition theory. This latter portion contains a suggested framework for research in the imperfections of competition in agriculture, which is perhaps the most neglected field in the new literature.

In the interest of brevity it is desirable to present the preliminary critical generalizations in the form of a series of propositions. These preliminary observations are intended as a basis and justification for the generalized approach to imperfect competition theory which will then be offered. The general nature of the defense for each proposition will be indicated, but no attempt is made at comprehensiveness.

Proposition 1: The theory of imperfect competition has raised questions which it cannot answer satisfactorily until the theory of perfect competition has been much more fully developed. As an obvious corollary, the chief work of economic theorists should for the present still be in the theory of perfect competition.

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[1] This is a slightly modified reproduction of a paper read at the meetings of The Mid-West Economic Association at Des Moines, April 16, 1937.

[2] "The Laws of Return under Competitive Conditions," *Economic Journal*, December, 1926.

[3] Reference may be made to the bibliography given by Chamberlin in the appendix to the second edition of his *Theory of Monopolistic Competition* (1936).

The new theory, in other words, has become something of a distracting fad. It seems often to be an escape from the very hard thinking necessary to secure a satisfactory and useful theory of perfect competition.[4] Sound theories of price and production are indispensable to the solution of even the simplest practical problems. Yet the majority of the writers on imperfect competition seem not to realize that almost all the important concepts they have taken over from perfect competition are suspect. Many instances could be cited. The distinction between external and internal economies is very probably unimportant, and certainly too vague to be meaningful at present. The utility theory of value is at least 40 years out of date and its descendant, the theory of substitution, is far from completed. The real cost theory has grave defects, and no one has been able to reconcile its rival, the alternative cost theory, with the division of labor. Capital theory continues to be mightily disputed. We cannot afford to repeat Mill's complacency; unfortunately a great deal more must be said about the theory of value before we enter more complicated branches of economic reasoning. We ought not to repeat the error of mathematics, which constructed a tremendous superstructure in a period of over 2,000 years, and only in the last century found it necessary to retrace its steps, in order to secure rigor.

Proposition 2: The new literature of imperfect competition has been more concerned with mathematical virtuosity than with desirable economic policy.

Concomitant with the rise of interest in imperfect competition there was a widespread adoption of mathematical techniques in economic analysis. The usefulness of mathematical analysis cannot be denied: It confers a brevity and precision which are almost invaluable. The argument here, however, is that purely formal and often trivial problems have received wide attention, simply because they offered excellent opportunities for technical analysis. As a corollary, the newer literature of imperfect competition is so complex that it is impossible for the legislator or the layman to glean even its major conclusions.

Parallel with this gravitation of economic interest toward techniques there has been a corresponding neglect of public interests, the feature *sui generis* of economic theory. The geometrical application of the marginal revenue concept are esthetically very elegant, but there are not a dozen emphatic passages in the

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[4] Doubtless some part is also played by the belief that perfect competition theory is valueless.

literature to indicate that marginal revenue is an essentially anti-social concept. Wherever it is used, in contradistinction to average revenue or price, as the criterion of output, usually the consumer is being exploited. Yet economists of the Bureau of Agricultural Economics offer no apology for using marginal revenue in analyses designed to discover "optimum" agricultural outputs.[5] Conservation, a word embodying high social objectives, is now a shield behind which class legislation may be promoted. Economics was frequently and unjustly called the dismal science because of its subsistence theory of wages; it may now deserve this opprobrium if it continues to neglect the consumer.

Proposition 3: The present theoretical studies of imperfect competition are dictated primarily by the analytical tools available for investigation, not by the problems awaiting to be solved. That is to say, virtually all of the discussion of imperfect competition is based on assumptions which are arrived at by the simple *a priori* extension of the postulates of perfect competition. There has been little systematic investigation of the actual output and price policies of our monopolists. We do not know their specific objectives and we are largely ignorant of the factors which determine their policies. It is certain that much of this information is difficult or impossible to secure. It is equally certain that non-economic factors play a very important role in imperfectly competitive fields,—one so much greater than in a competitive field that it is absurd to neglect them. Prestige, mass hysteria, and "politics," for instance, seem more influential in contemporary trade union policy than the calculations of the economic man.[6]

It should be apparent, from these three propositions, that the present criticism of the treatment of imperfect competition relates to what it has failed to do, not what it has done. In general the theorists of imperfect competition have raised many problems and solved very few. The chief value of the recent discussion has been to suggest the wide scope of imperfections of competition in our economy. In the field of technical analysis I venture the statement that few, if any, fundamentally new theories have been developed since the World War. The theory of discriminating monopoly has been considerably refined, for example, but all the essentials of the discussion can be found in Edgeworth's earlier works. Indeed one could easily sustain the thesis that in

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[5] For example, F. V. Waugh, E. L. Burtis, and A. F. Wolf, "The Controlled Distribution of a Crop among Independent Markets," *Quarterly Journal of Economics*, November, 1936.

[6] These non-economic elements, the writer submits, go far to explain the unquestionable "stickiness" of prices in monopolized sectors of our economy, where the pure theory of monopoly would lead us to expect flexible prices.

a mad scramble for originality our younger theorists have made poor use of the received doctrine of several generations of extraordinarily able economists.

The remaining and major portion of this paper is therefore devoted to a generalization of the theory of imperfect competition and a program of research. It will doubtless be noted that this program differs from that implicit in the current literature primarily with respect to orientation, and only secondarily with respect to content.

All students of imperfect competition have accepted, either explicitly or by their practice, the received theory of competition as the point of departure, and this is of course both desirable and inevitable. But as the tenor of the preceding remarks indicates, the writer believes that the tremendous usefulness of competition theory has been very imperfectly utilized.

There has been, first of all, great confusion regarding the *nature* of usual economic assumptions. Frequently incompatible and mutually inconsistent postulates have been used in the analysis of a problem. Chamberlin, for instance, postulates the existence of perfect knowledge on the part of the consumer, when he treats with differentiation of commodities.[7] Yet it should be almost obvious that in an economy where consumers possessed perfect knowledge, branded articles would be of interest only to historians.

The second defect in current use of competition theory has already been elaborated. In contrast with the previous point, it may be said that the *wrong* assumptions have been used. The new approach has been based in large part on the shibboleths and *clichés* which populate our elementary textbooks. The general thinking on economies of large scale production, for example, has not advanced much beyond the point to which Marshall brought it almost half a century ago. Yet such economies, if they are really important, are one of the major bases of imperfect competition. On the other hand, the concept of perfect competition has been so loosely defined that agricultural economists have devoted little attention to the imperfections of competition which exist in their field.

A new method of approach to the phenomena of imperfect competition suggests itself from these considerations. Like all detailed methodology it carries no assurance of reaching the truth easily or swiftly. It does seem adapted, however, to the

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[7] *Op. cit.*, pp. 73 ff.

task of remedying the deficiencies in the current approach. This method, in brief, is that of stating rigorously the assumptions of perfect competition, and then modifying each assumption.

The suggested approach and the problems it raises, may be illustrated by a preliminary discussion of three of the most fundamental economic assumptions of the theory of perfect competition.[8]

Assumption 1: Perfect Knowledge. There is no more important assumption underlying classical and neo-classical economic thought than that of perfect knowledge. The breadth of this assumption is truly astonishing. Its implications may perhaps be indicated by application of the assumption to an important economic personage: the entrepreneur.

Let us assume that all of the entrepreneurs in one industry, let us say farmers, possess perfect knowledge. They know, that is to say, the demand for their product, their own and all other farmers' costs, and, finally, what every other farmer is thinking and what he will do. Under such circumstances it is easy to show that the entrepreneurs will combine and pursue monopolistic policies, no matter how large their number. There is no need for an explicit combination; perfect knowledge is an ample substitute for an Agricultural Adjustment Administration. This conclusion differs from that of Chamberlin and Pigou, it should be noted only in that they restrict the conclusion to the case of a few producers.[9] This seems illogical, for with truly perfect knowledge, it will be realized by each farmer that any price cutting tactics will immediately be followed by his "competitors" (no matter what their number), leading to a lower ultimate return.

This superficially paradoxical conclusion, that perfect knowledge always leads to a monopoly price, may readily be resolved. The reasoning implies that perfect knowledge is restricted to the one industry under consideration, and this is surely unjustified. If perfect knowledge is universal, entrepreneurs in other industries will follow the same course of reasoning. But since universal monopolistic practices would greatly reduce all incomes, no entrepreneur will act monopolistically, and the net effect will be the establishment of competitive prices. Perfect knowledge, in other words, brings us back to the standard competitive result, that the output from given resources will be maximized.[10]

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[8] For a more elaborate analysis of the assumptions of perfect competition, the classic treatment by F. H. Knight, *Risk, Uncertainty and Profit* (1921), should be consulted.
[9] Chamberlin, *op. cit.*, pp. 47f; Pigou, *The Economics of Stationary States* (1935), pp. 93-4.
[10] But as a corollary, uneven distribution of knowledge will in general lead to monopolistic practices.

Imperfections of knowledge may be divided into two classes, depending on the basis of the imperfection. The first group of imperfections rise out of historical change, i.e., the inability of individuals to forecast future movements of demand and cost conditions. The second category, a residual one, includes imperfections of knowledge which would remain even if historical change were eliminated. The first group is much too complicated to be considered here.[11] The second group, those imperfections found in a stationary economy, deserves some attention.

Ignorance is, in the writer's opinion, the chief basis for imperfect competition in a stationary economy. The full defense of this cannot be undertaken here, but a brief consideration of several important types of imperfect knowledge should make the proposition almost self-evident. Three cases should form sufficient illustration:

1. *Consumer Ignorance.* Under perfect competition the consumer is presumed to know the prices and qualities of all goods and services, no matter how technical the commodities or numerous the sources of supply. This is obviously untrue, and from it spring most of those cases of imperfect competition now called "monopolistic." Trade marks and brands, and as a consequence advertising, would disappear in a market of educated consumers. All fraudulent practices, such as those centering about quack medicines, would instantly vanish. In passing it should be stated explicitly that the failure to undertake educational programs to correct this exploitation is one of the severest indictments that can be levied against a democratic government.

2. *Resource Ignorance.* In the field of resources the deficiency of knowledge is less acute. Nevertheless in the field of labor, in particular, ignorance is notorious. Virtually all sustained differentials in wage rates between similar occupations and localities may be attributed to absence of information. The case of fraudulent securities is also in point.

3. *Entrepreneurial Ignorance.* Here the problem is much too complicated to permit even rash generalizations. Every conceivable type of knowledge is absent at some point in the economy. The studies of Schumpeter,[12] among others, would indicate that entrepreneurship would disappear in a stationary economy were it not for ignorance. This conclusion raises difficulties for the stability of competition that will be noted subsequently.

In certain respects agriculture has become increasingly competitive in recent years. The collection and dissemination of marketing information, for instance, has removed an important defect in the process of marketing agricultural products. On the

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[11] Consult again, Knight's standard work, *op. cit.*
[12] Cf., *The Theory of Economic Development* (1934), p. 76.

other hand, the typical farmer's ignorance of his costs, and, to a lesser extent, of improved techniques, is an important explanation of his proverbial unwillingness to abandon farming even when conditions are extremely adverse. The so-called share-cropper problem, it is submitted, is greatly complicated by the same element, ignorance. The imperfections of knowledge in agriculture are important enough to merit extensive research; their elimination would reduce considerably the "agrarian problem."

Assumption 2: The Economic Man. At the outset it must be said that no person in modern history has been more unjustly maligned than that proverbial economic character, the economic man. It is elementary to all scientists that certain methodological assumptions, which everyone admits are contrary to fact, are indispensable to theoretical reasoning. No one begrudges the physicist the right to ignore friction, and the mathematician is permitted perfect circles no one will ever see. The case for the economic man is just as strong, and had he not been imported into economics, today there would be no science worthy of the name.

The elimination of the economic man would add much realism, admittedly. And it is now the duty of those students versed in economics, sociology, and psychology to attempt the task.[13] For much economic behavior is indubitably affected by non-economic factors. Love of home and neighborhood, racial prejudice, personality, and similar factors creep into every broad economic problem.

In general the consumer seems least motivated by non-economic considerations, if imperfections of knowledge are removed. Loyalty to the neighborhood store and charitable elements in domestic wages are well-known, but such cases do not seem able to withstand large price differentials.

In the resources field, however, the complications are almost unlimited. The well-known immobility of capital and labor seem attributable to non-economic considerations, at least in the short-run. Agriculture again offers an apt field for illustration. The desire of the farmer for land ownership and for independence seem important in explaining not only land value fluctuations but also the failure to adopt large-scale production methods. This field is well-suited to research. It is amazing that it has received so little attention, especially since it seems exceptionally amenable to empirical investigations.

[13] Cf., Talcott Parsons, "On Certain Sociological Elements in Professor Taussig's Thought," *Explorations in Economics* (1936), pp. 359-79.

Assumption 3: Divisibility. With only one exception, it is assumed that all economic quantities are divisible. Every time a continuous curve is drawn, the assumption is explicit, but at practically every point in theoretical reasoning it is strongly implied.

In the case of the consumer the assumption does not appear to require serious modification. Where consumption goods and services do occur in large, indivisible units, one of several supplementary arrangements may be utilized to secure divisibility. One obvious system is that of joint consumer ownership, and most transportation agencies are of this type. Another arrangement is that of hire, whereby the use of durable goods is secured for relatively short periods. Taxicabs are an apt illustration of this device. Such devices need not be multiplied here. It is sufficient to note that there are very few consumption goods which may not be treated as divisible without serious violence to the facts.[14]

In the field of production the picture is radically different. Here, with insignificant exception, economists have not, despite their free use of curves, assumed divisibility. It is demonstrable that all economies, external or internal, must rise out of indivisibilities of productive resources.[15] But no one has paid much attention, either theoretical or empirical, to the question of indivisible resources. The phrase, division of labor, has received much modernization since its classic treatment by Adam Smith, but the process of modernization has not added greatly to the profundity or quantification of our knowledge.

If indivisible resources are typical or important, then long-run decreasing average costs are typical or important, and competition is impossible. The presumption to be drawn from theoretical analysis, however, is that indivisibilities are exceptional and unimportant. Professor Knight has stated the case well: "No fallacy is more pernicious with reference to intelligent economic policy than the popular illusion that large-scale business is in general more economical than small-scale."[16] *A priori* the case for divisible factors is very weak, and urgently needed empirical studies will probably make it much weaker.

Then why the strong and clearly observable tendency toward larger economic units? As to stimuli, the chief reason, it is sub-

[14] Indeed the elimination of important indivisibilities of consumer's goods (and of producer's goods) is a certain source of profit, and indeed this function is one of the cornerstones of retail trade.
[15] Compare J. Robinson, *The Economics of Imperfect Competition* (1933), Appendix.
[16] "Cost of Production and Price," reprinted in *The Ethics of Competition* (1935), p. 210.

mitted, has been a non-economic drive for *business power*. No other motive seems applicable in the interpretation of the history of our railroad systems, the oil industry, the steel industry, and the like. Supplementary to this major purpose is, of course, that of being able to exact monopolistic prices.[17] On the side of opportunity for monopolization, as Professor Fetter has pointed out in his brilliant review of Burns' *Decline of Competition,* we must blame "mistaken human laws, misinformed public opinion, and the limitations of public officials—legislative, judicial, and executive."[18]

The question of the entrepreneur's role deserves passing attention. It was previously stated that all productive resources, except one, may be treated as perfectly divisible under the first approximation to the theory of production. The necessity of an exception may be noted: A corollary of divisibility of all resources would be what is called the homogeneous production function, which is to say, a doubling of all the productive resources will double the product.[19] If production functions are homogeneous, then efficiency is not related to size of plant. For individual firms to be limited in size (which is an accepted but questionable condition for competition), at least one productive factor must be subject to increasing costs. Managerial ability seems to be that role. Kaldor has suggested that policy-formation is the entrepreneurial function which in real life shows a tendency toward rising costs to the firm.[20] This is questionable, for corporation directors, who make decisions regarding policy at the present time, often serve on 60 or more corporations—scarcely an index of diminishing returns. The answer seems to lie in the problem of administrative coordination, the problem of getting many people to cooperate.

In agriculture the problem of indivisible resources is in general relatively unimportant. The alleged economies of large scale processing units certainly require critical investigation, however, as do those in the manufacturing of agricultural implements. The converse problem is also pertinent: what part have indivisibilities played in the persistence of small-scale agricultural units? Such problems have been unduly neglected by agricultural economists.

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[17] This second motive seems to have been most influential in the formation of the agricultural implements monopoly. Cf., *The International Harvester Company,* a study made by the Bureau of Corporations of the Department of Commerce and Labor, March 3, 1913.

[18] "Planning for Totalitarian Monopoly," *Journal of Political Economy,* February, 1937.

[19] For a general discussion of the production function, consult H. Schultz, "Marginal Productivity and the Pricing Process," *Journal of Political Economy,* October, 1929. The detailed history and controversial aspects will be treated in a forthcoming article by the present writer, "Studies in the History of the General Marginal Productivity Theory."

[20] Cf., "The Equilibrium of the Firm," *Economic Journal,* March 1934.

Two minor assumptions of competition may finally be noted. They receive attention here only because many economists entertain the view that they are important.

Assumption 4: Spatial Concentration. It is usually assumed that the market is located at a mathematical point. Such an assumption is clearly but an abbreviation, for by the introduction of transportation costs it is simple to concentrate all economic forces at a single point. As a device for simplifying exposition, the assumption seems thoroughly justified.

Nevertheless certain writers, Schneider and Hotelling in particular,[21] have been somewhat concerned over the theory of imperfect competition as applied to spatially distributed markets. An examination of two important spatial problems should serve to emphasize the fact that they are really special cases of failure of the preceding three assumptions.

1. Geographical differentials in price, particularly of productive resources, is well-known. But as has been indicated above, these differentials are explicable on grounds of absence of knowledge or of presence of non-economic factors.
2. The inability of a region to support many firms is often treated. Yet this is surely due to the indivisibility of production units.

Transportation may of course be treated as a factor of production, and if this is done it is probable that very little really is left to say about the general theory of location.

Assumption 5: Numerous Buyers and Sellers. This assumption, on the absence of which the very existence of monopoly depended in the older theory, is of distinctly minor importance. The reason should be obvious: if the three important economic assumptions of competition are fulfilled, the existence of many buyers and sellers is merely a corollary. With perfect knowledge, divisibility, and what may be termed economic rationality, sufficiently numerous buyers and sellers are certain to populate every market.

The problem of duopoly or oligopoly, to which the absence of large numbers gives rise, has received wide attention. Only recently has it become clear that the famous dispute between Cournot and Bertrand (and their followers) really rises from a failure to specify the basis for the duopoly. Accordingly, the general case of duopoly is generally conceded to be insoluble without additional information. The special but important case of a dominant firm, has been solved rather easily, however, although the solution has not appeared in print.[22]

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[21] Compare items 101, 106, and 107 in Chamberlin's bibliography, *op. cit.*
[22] The solution was first suggested by Professor J. Viner in lectures at the University of

In addition to these and certain other minor economic assumptions of perfect competition, there are important political conditions. These political considerations, which relate primarily to the institution of property and the activities of the state, are mentioned only for completeness; they are not treated here. Mention should be made, however, of the concise and brilliant discussion they receive from Professor Henry Simons in his *Positive Program for Laissez Faire.*[23]

In conclusion one probable objection to the foregoing program of research should be combated. The objection is that perfect competition, if it ever existed, certainly is now irrevocably gone, and to study it is to waste time. In part this objection may be based on the confusion of perfect competition with the existence of large numbers of competitors. Aside from this misinterpretation, however, three answers are available. The first is methodological, and has already been given. Perfect competition theory is an invaluable weapon with which to attack more complicated economic phenomena. The second reply is that it is now established beyond reasonable doubt that most of the theory of competition would be completely applicable in the type of totalitarian state which is being so uncritically urged in the current reform literature. And finally, of course, there are those who still adhere to the belief that a liberal economic society is the object of all good social policy. To them it is still important to compare economic policy under perfect and imperfect competition, to understand the causes of imperfect competition, and to formulate remedies to restore a competitive regime.

Chicago, so far as the writer knows. If it is assumed that the dominant firm sets the price (and quantity) to maximize its own profit, the minor firms behaving competitively, then the "follow the leader" case emerges. The analytic procedure for dealing with this case may be stated in geometrical terms: From the demand or average revenue curve of the industry is subtracted the marginal cost (and hence short-run supply) curve of the minor firms, leaving the demand curve for the dominant firm. To this latter demand curve a marginal revenue curve is drawn, representing marginal revenue to the dominant firm. If this is set equal to the firm's marginal cost, the maximum profit point is determined.

[23] Public Policy Pamphlet No. 15; Chicago: University of Chicago Press, (1934).

MATHEMATICS IN ECONOMICS[1]

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Introduction

The extent to which the application of mathematics is justified in economics does not lend itself to an *a priori* decision; this decision will have to be formed according to the results achieved. Certainly mathematics will never be able to simplify the great mass of economic theory to a few symbols, but it may be able to help select the essential parts and express them in a condensed form. The slowness of the introduction of mathematics into economics is not only a result of the tendency of economists to avoid the subject, but also of the scarcity of mathematicians interested in economics. In fact, the demand for mathematics in economics seems to have come from the economic side.

Those who make too strong a claim for the mathematical method appear to believe that this method can of itself yield valid conclusions in economics. The method of going from assumptions to conclusions is a matter of preference, and there is no *logical* difference between reasoning without mathematics and that which uses higher mathematics. It is true, however, that once the assumptions are put into symbols, complicated deductions can be made with much less effort. In addition, mathematical operations with carefully defined concepts connote the same meaning to the reader and the author, while nonmathematical discussion sometimes leads to different interpretations by different individuals. Of course, one of the practical difficulties of introducing mathematics into economics is that most economists are not trained in higher mathematics.

The opposite view that the mathematical method is completely useless for economics usually rests on the mistaken identification of this method with measurement. It may be mentioned that there are branches of mathematics in which the concepts are not measured; these deal with functional relations where only properties of the functions are known, such as the sign of the first and second derivatives. Also inequalities, where exact numerical relations cannot be set up, are used in some parts of mathematics as much as equalities. Hence mathematics is useful in treating economic

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relationships which can be represented by symbolic functional notation even though they cannot be measured.

Relation of Mathematics to Economics

Mathematics has entered the field of economics by means of three fairly distinct paths: (1) mathematics of finance and mathematics of insurance, (2) statistics or induction, and (3) mathematical economics or deduction. The role of mathematics in the first is well established; and even though opinions still differ widely on the place of mathematics in statistics, the subject has been discussed so frequently that it may well be spared in this paper. Hence, these subjects are only briefly discussed in the following paragraphs, and this paper is primarily devoted to a discussion of the use of mathematics in economic theory, a practice that has been increasing rapidly during recent years.

Mathematics of finance and mathematics of insurance are refined and important sciences that are not logically distinct from mathematical economics, but usually they are considered separately. In fact, the mathematics of finance is deduced from the definition of the rate of interest in combination with the definition of present value, or value at an arbitrary time. Mathematics of insurance is one of the most important fields of application of the theory of probability.

Statistics may be divided into the two parts: (1) theory of probability and statistics; (2) and the application of this theory and its interpretation. The former very definitely requires mathematical ability and training, while in the latter, it is useful though perhaps not indispensable.

Mathematical economics may be defined as a set of economic propositions and arguments presented with the aid of mathematical symbols and processes. There are two distinct groups of mathematical economists. One group demonstrates a determinate general equilibrium under the assumptions that a utility function exists and that each individual trades so as to maximize his utility. Outstanding economists in this group are Jevons, Pareto, and Walras. The other group discards the concept of utility and investigates special problems with concrete measurable concepts.[2] Surely such terms as profits, money, costs, etc., suggest concrete hypotheses and they suggest the use of the common unit that money fixes to many economic concepts. Cournot was the first, and for many years, the only outstanding economist with

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[2] Evans, Griffith C., The Role of Hypothesis in Economic Theory, *Science*, Vol. 75, No. 1943, pp. 321-324, March 25, 1932.

this viewpoint. However, the present generation of economists includes several followers of Cournot.

It seems that the chief purpose of economic theory is to make hypotheses and to determine relations and deductions which follow from these hypotheses. The theory may then be checked by comparing the conclusions with the facts of existing economic systems. In order to maintain clarity in theory, the various systems of economic theory which depend on different hypotheses must be kept distinct and the deductions in one system must not be considered as results in a system based on different postulates. Mathematics is a tool for aiding in these theoretical logical deductions as well as in building up the technique of statistics.

Usefulness of Mathematics to Students of Economics

Let us discuss the advantages and disadvantages of mathematics to students of economics or statistics. The need of mathematics in statistical theory, say up through analytical geometry, is surely accepted by teachers of the theory of statistics. Of course, good work has been done in the application and interpretation of statistics by those who have not had this much mathematics; but they could probably have accomplished the same work with much less effort and with more self-confidence and peace of mind if they had been more familiar with the use of symbols as an aid to their thinking. But aside from the need of students of statistics for a knowledge of mathematics, let us consider students of economics or agricultural economics. From their standpoint three disadvantages of mathematics are:

1. Effort and time are necessary to acquire familiarity with symbols and mathematical technique, and many students already have programs that are too full to permit opportunity for a desirable amount of meditation and independent reading. However, many mature economists have expressed regret that they did not include more mathematics in their undergraduate training. In view of this condition and the fact that mathematics is one of the most difficult subjects to study after one leaves school, it might be profitable to include two or three mathematics courses in the regular economics or agricultural economics curriculum in place of subjects that are more easily learned later in life. It is particularly desirable for a study of mathematics to come early in undergraduate training, so that it may be used in later courses in economics or statistics. Students who hope to use their mathematics in making contributions to economic theory or statistics need at least the equivalent of a mathematics major; but less

mathematics would enable other students to understand many discussions that they are unable to grasp otherwise.[3]

2. Many economists do not easily follow mathematical discussions, so anyone using this method must face the disadvantage of a restricted audience or group of readers.

3. For the uninitiated the use of symbols may lead him to believe his results more general or more valid than he is justified in believing; whereas symbols are merely short expressions for concepts that require longer and sometimes involved word descriptions. Often those unfamiliar with the limitations of the use of mathematics consider their numerical results more accurate than they are warranted in considering. Einstein said something like this: "Insofar as a mathematical conclusion is infallible, it is not realistic; and insofar as a mathematical theorem includes realism, it is not infallible."

Let us consider the advantages of mathematics. Many very intelligent people are almost completely lost the instant symbols or even simple formulas enter a discussion. Now that the articles in economic journals are using more mathematics each year, it seems that we should insist that our students have enough familiarity with mathematics to overcome this inferiority complex.

After overcoming this fear of symbols, perhaps the next most important usefulness of a study of mathematics is the cultivation of an appreciation of the need for carefully stated definitions and hypotheses. Of course, mathematics is not necessary for this, but it is helpful; and if one can express his assumptions in terms of symbols, he will then be able to carry out rather complicated deductions much more easily without losing sight of his assumptions. Also weaknesses in one's analysis become more evident when the analysis is expressed mathematically, while in non-mathematical economic reasoning, conclusions sometimes are scarcely different from the premises. For example, Hayek[4] in his book, "Prices and Production," does not convince all readers that he has always clearly distinguished between definitions, assumptions, and conclusions. However, it must be emphasized that mathematics is only an aid to and not a substitute for accurate reasoning. Nevertheless symbolic representation does make available the tremendous amount of powerful reasoning in the established mathematical operations and theorems.

[3] For a more detailed discussion of the subject of this paragraph, see, Collegiate Mathematics Needed in the Social Sciences, *American Mathematical Monthly*, Vol. XXXIX, No. 10, December 1932, a report prepared for the Social Science Research Council by a committee consisting of H. R. Tolley, F. L. Griffin, Holbrook Working, Charles H. Titus and Mordecai Ezekiel.
[4] Hayek, F. A., *Prices and production*. 112 p. London, 1931.

As an example of the use of symbols in stating assumptions and carrying out complicated deductions, let us turn to the subject of controlling the flow of goods to market. We wish to regulate the shipments of a particular commodity in order that the total profit for the season will be a maximum. Two of four assumptions describing the situation are that the amount of goods to be sold is a fixed known quantity and that the goods shipped are sold after a time lag. The other two assumptions must give the type of demand curve for the commodity and the cost function for shipping and marketing. After stating these assumptions in symbols, the calculus of variations makes it possible to determine the manner in which the shipments should be distributed through time so as to maximize the season's profit to the industry.

Students who have worked with mathematical relations and functions of several variables are not so likely to fix their attention on some single factor as "the cause" of a certain phenomenon, but they are receptive to the notion of mutual relations and action and reaction among several factors. The more variables there are in a problem, the more mathematics is needed to help keep track of them. When the variables are definitely represented in formulas, they are less likely to be tacitly assumed constant or ignored and the formulas direct attention to the data needed in a problem. Here we might point out an advantage of analysis with symbols over that with geometry. In a two-dimensional figure, one can represent conveniently a function of only a single variable by a curve, and a function of two variables may be represented in a three-dimensional diagram by a surface. With more variables, diagrams are not practical and analysis is used. For example, as a first approximation, we may consider the demand for a particular commodity as a function of only one variable, the price of that commodity. This can be represented geometrically as a curve in a two-dimensional plane, or merely by the notation $D = F(P)$. For a second approximation, we introduce consumer income as a factor determining demand. The demand can then be represented as a surface in a three-dimensional diagram, or by the notation $D = F(P, I)$. However, when we extend our analysis to include other factors such as the price of a competing commodity, a convenient geometrical representation is impossible, while this more general situation can be described as before by the notation $D = F(P, I, P_c)$. Functions of any number of variables can be represented and manipulated in symbols in the same manner as functions of one or two variables.

One of the simplest, but yet one of the most useful and im-

portant advantages that may be gained from a little mathematics in economics is a clear notion of the dimensionality of economic magnitudes. Students frequently become confused as to the proper units in which to express economic phenomena, and they (not only students but economists with world-wide reputations) make statements that absolutely cannot be true, and which show that they do not have a clear idea of the meaning of their statements. A careful check on the dimensionality of our concepts is most helpful for making clear, accurate statements and for testing results. One of the main propositions in Hayek's theory is that the length of production is equal to the demand for pro-

ducers' goods expressed in terms of money divided by the demand for consumers' goods expressed in terms of money. These concepts cannot be equal because his length of production is of dimension one in time (say a month, six months, or a year), while the ratio of the monetary demand for producers' goods to the monetary demand for consumers' goods is an abstract number; that is, it is of dimension zero in all units.
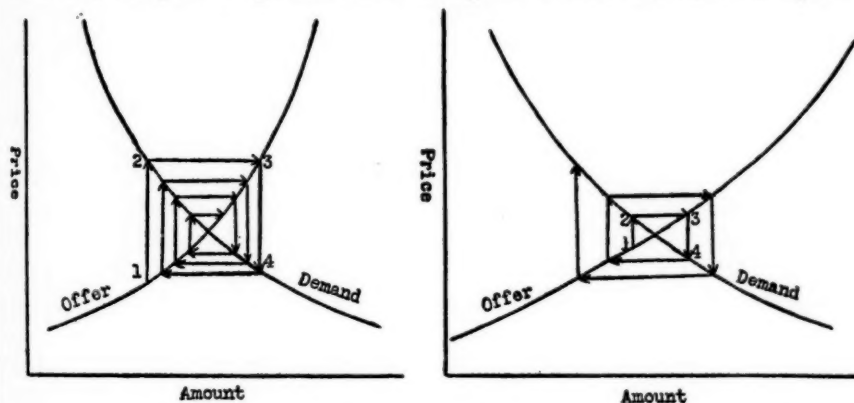
Mathematics is also helpful in revealing hidden hypotheses. A common proposition in economics is that the equilibrium price of a commodity is at the intersection of the demand and offer curves, and that any movement away from this price sets up forces which cause the price to move back towards this equilibrium price. This conclusion is only valid for certain types of demand and offer curves, while for other curves any movement in the price away from this intersection is followed by prices which move farther and farther away from it.[5] Let us consider the two sets of curves in the accompanying figure.

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[5] Evans, Griffith C., A Simple Theory of Economic Crises, *Journal of American Statistical Association*, Vol. XXVI, New Series No. 173A, p. 61, March 1931 Supplement.

In both cases the first amount offered is indicated by 1; because of the demand this amount can be sold at the price indicated by 2. This price will then bring the offer 3, which can only be sold at the price 4, etc., as indicated by the arrows. With the demand and offer curves on the left, the price moves toward the price given by the intersection of the two curves; however, with the curves on the right the price moves away from this so-called "equilibrium" price if it ever becomes different from it. Of course, it may be argued that this theory is based on hypotheses that are not realized in our actual pricing process; but this can be said of any economic theory. In any event, all implicit and explicit hypotheses are the same in both cases except the slope and position of the curves, but the conclusions are diametrically opposite in the two cases.

Mathematics has particular processes developed for solving maximum and minimum problems, and economics is mostly concerned with such problems as maximizing profits under certain given conditions, producing a given product at a minimum cost, and obtaining a maximum product at a given cost. The first of these problems, or some variation of it, arises when the postulated regime is either a monopoly or cooperation. It is also encountered in that kind of competition where each individual regards the price as fixed and tries to make his profit a maximum, as well as in a competitive system in which each competitor assumes the production of the other or others is independent of his, and tries to make his profit a maximum. The problem of minimizing costs for a given production arises in integrating the different stages of a production process into an efficient organization. While theoretically a planned economy endeavors to maximize some composite product with a given number of labor units, or a given money appropriation.

If we are analyzing a static state, the methods of differential calculus are appropriate; but in dealing with dynamic processes, we are faced with the problem of maximizing integrals during an interval of time which requires the methods of the calculus of variations. In view of these illustrations as well as many others, it appears that all theoretical and many nontheoretical economists, whether they are interested in general equilibrium or specific concrete problems, must maximize or minimize some of their concepts under given conditions or restrictions.

The field of taxation has many problems which are particularly

adapted to a mathematical formulation. For example, a tax such as a levy on each unit of output or a levy on the capital value of a particular industry is a change in the cost function; and in studying the effects of changes in functions such as cost or demand functions, mathematicians use finite increments.[6] By these methods the loss in profit to the producer or producers, the change in production and the change in price as a result of the tax may be determined for the different regimes of monopoly, cooperation and competition. The fallacy in the statement that the burden of a tax on the profit of a particular industry is passed on to the consumer in the form of higher prices is obvious to one who has had experience in maximizing functions. The amount of production and the price which maximized the profit of a particular industry before the tax will also maximize the profit after the tax, because the profit after the tax is merely the former profit multiplied by a constant. Similarly, it is also impossible to pass on to the consumer any tax levied on a particular industry which is a fixed cost, since this tax merely subtracts a constant amount from the profit.

Other advantages of mathematics that might be mentioned are:

1. A mathematical analysis shows that a problem is determinate or not by comparing the number of unknowns with the number of independent equations.

2. Curves intersecting in more than one point or equations with multiple roots demonstrate the possibility of more than one equilibrium point and the possibility of several maximum or minimum points.

3. A knowledge of the definition and application of the derivative enables a student to understand immediately the meaning of such concepts as marginal utility and marginal cost and their relation to the concepts of total utility and total costs.

4. Finally, the postulations of mathematical theory are so clearly abstract and idealized that they are not likely to have their hypothetical character misunderstood, while a postulate expressed in familiar words may be considered more applicable to a specific practical problem than justified. Here a knowledge of mathematics enables one to realize better its limitations and so overcome the third disadvantage mentioned.

It has been said "The human mind has never invented a labor-saving machine equal to algebra."

[6] Evans, Griffith C., *Mathematical Introduction to Economics*, New York, 1930, Chapter V.

Suggested Mathematics for Students of Economics[7]

Mathematics that students of economics or statistics could take with profit, particularly during their early undergraduate training:

1. College algebra.

2. A few lessons in trigonometry (definitions and fundamental relations).

3. Analytical geometry with sufficient solid analytics to enable the student to think, draw, and visualize in three dimensions.

4. Differential calculus (the fundamental definitions, the methods of maximizing and minimizing functions and their application to economic concepts).

5. Short course in probability.

Courses that are desirable but not essential:

1. Finite differences.

2. Integral calculus.

3. Differential equations.

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[7] For a more detailed discussion of this subject, see a paper previously referred to, Collegiate Mathematics Needed in the Social Sciences, *American Mathematical Monthly*, Vol. XXXIX, No. 10, December 1932.

EXPENDITURES OF LOCAL GOVERNMENTS[1]

Conrad H. Hammar[2]

The local governments referred to in this discussion of a specific research project include all rural governments such as the county, school district, road district, and other rural districts but do not include municipal corporations. Data are from eleven counties representing all parts of the state of Missouri except the large urban counties and the Southeast Lowlands which present special problems apart from those characteristic of most rural counties in the state.

The data on expenditures are from annual county financial statements and state school and auditors' reports. They are, for the years 1914 to 1934 inclusive. Not always were the data of the financial statements strictly comparable from county to county, though roughly similar acounting methods were followed in all. The statements include most expenditures though in the case of salaries and fees, probably one-third of the payments were not reported. Adjustments were made to take account of this fact.

The counties represented range all the way from the very wealthiest of the rural counties down to the very poorest and one semi-urban county, Boone, was included for purposes of contrast. All other counties were rural in so far as that may be determined by a great preponderance of taxable wealth in the hands of farmers or other owners of rural lands and personalty.

Little or no consideration was given to receipts of these same governments and attention was concentrated on expenditures.

Forces to Which Expenditures Respond

Total expenditures in the eleven counties responded to differences in both assessed valuations and population but not appreciably to differences in mere area. The response of expenditures to increases or decreases in assessed valuations is remarkably uniform in the rural counties. Only for semi-urban Boone County were expenditures appreciably above a straight line representing the relationship. Apparently also larger populations demanded increased services of government but the relationship between populations and expenditures is by no means as precise as that between expenditures and assessed valuations.

Other factors having effects on expenditures were tax rates and

property tax delinquency. In general in Missouri, tax rates are high in urban counties and in poor counties, that is, those with low taxable wealth. Tax delinquency also was heaviest in the poorer counties and particularly in counties having large areas of poor lands.

Percentage Distribution of Expenditures

A percentage distribution of expenditures for the eleven counties for 1930-34 shows 53.1 percent of the total expended for schools, 19.8 percent for roads, 8.6 percent for salaries and fees, 3.7 percent for paupers, 3.9 percent for insane, 2.5 percent for criminals, 2.0 percent for hospitals, and 6.4 percent for all others. The division appears to follow what may now be called traditional lines and is by no means new. What is more nearly new is the fact as brought out in the table below that the percentage of expenditures for schools and roads is much higher in the richer than in the poorer counties. Thus in Atchison County where the taxable wealth per capita was greatest the expenditures for schools and roads, which the ordinary citizen counts as benefiting him most, constituted 78.4 percent of all expenditures. In Carter County in the poorest section of the Ozarks, by contrast, the expenditures for schools and roads were only 66.7 percent of the total.

TABLE 1. THE RELATIONSHIP BETWEEN TOTAL EXPENDITURES AND THE PERCENTAGE DISTRIBUTION OF EXPENDITURES FOR VARIOUS CATEGORIES OF SERVICES AND FUNCTIONS IN ELEVEN MISSOURI COUNTIES, 1930-34

County	Per Capita Assessed Value	% Exp. for Schools, Roads and Hospitals	% Exp. for Salaries and Fees	% Exp. for all other Functions
Atchison	$2098	78.4%	5.8%	15.8%
Johnson	1538	78.4	7.6	14.0
Howard	1337	72.1	9.4	18.5
Ralls	1335	73.0	8.6	18.4
Macon	1189	75.6	8.8	15.6
Franklin	1040	74.9	7.8	17.3
Callaway	1006	77.8	8.8	13.4
Boone	979	76.6	8.1	15.3
Carter	767	66.7	15.5	17.8
Newton	716	65.5	11.4	23.1
Shannon	494	68.4	14.6	17.0

Looking at what amounts to the obverse aspect of the same thing: for those things more nearly in the "must" or "necessary" class, that is, salaries and fees, the situation is exactly reversed. Thus in Atchison County the expenditures for salaries and fees were only 5.8 percent of total expenditures while in Carter County they were 15.5 percent of total expenditures or almost three times as great. The richer counties provided themselves with the necessary aspects of government with ease and had a relatively large portion of their total expenditures to de-

vote to the more luxurious services of government. The necessary
services take a greater proportion of the total in the poorer coun-
ties and leave lesser amounts for those types of services that
more nearly promote the welfare of the individual citizen.

School Expenditures

This difference in the percentage of funds available for schools
and roads is reflected (though other factors play an even greater
role) in the amounts of money expended on public schools.
Wealthy Atchison County with a high taxable wealth per school
child spent $50.53 per enumerated child on schooling during 1930
to 1934. Poorer Carter, Shannon, and Newton counties with a
smaller taxable wealth per child and a smaller percentage of total
funds available to be expended upon schools were able to provide
less than a third as much per enumerated child as Atchison
County.

The expenditures per school child as was the case with total
expenditures responded almost precisely to changes in the
amount of taxable wealth per child. Tax rates for school fund
purposes were indeed higher in the poorer than the more wealthy
counties, but delinquency cut down the amount collected and spent
for this purpose.

The relatively poor provision for public school education in
the poorer counties had a number of adverse results. Teachers'
salaries were lower; teachers were more poorly trained; school
terms were shorter; the values of school buildings, sites, and
equipment per pupil were less; children dropped out of school at
an earlier age; there was far less provision for high schools; the
percentage of illiteracy among those ten years of age and over
was much greater in the poorer than in the more wealthy counties.

By contrast the number of children in the poorer counties was
greater in relation to the adult population than in the more
wealthy counties and particularly than in the urban or metro-
politan counties. In fact, preliminary ratios indicate that the only
significant increase in population in Missouri, accruing because
of the preponderance of births over deaths, is coming from the
poorer section of the Ozarks and the cotton counties of the South-
east Lowlands. Over the period 1914-34, indeed, the number of
school children as enumerated by county clerks decreased by 25
percent in the four wealthiest among the eleven counties, de-
creased by 12 percent in counties of moderate wealth, but actually
increased slightly in the three counties of lowest taxable wealth.
Furthermore depression migration has seen a heavy infiltration

of people only a little if any above a relief client status into the poorer Ozark counties whereas the richer agricultural counties of northwest Missouri have received so few of these depression migrants that their total population even between 1930-35 actually declined. See Table 2.

TABLE 2. INCREASE IN NUMBERS OF FARMS AND IN FARM POPULATION, 1930–35
IN ELEVEN MISSOURI COUNTIES*

County	Percentage Increase in Number of Farms	Percentage Increase in Farm Population
Atchison	3.8%	− 2.8%
Johnson	0.4	− 2.9
Howard	14.3	+ 6.1
Ralls	11.2	+ 7.4
Macon	7.8	− 0.2
Franklin	6.9	+ 9.6
Callaway	9.3	+ 9.8
Boone	15.3	+19.3
Carter	32.6	+27.7
Newton	25.9	+20.2
Shannon	13.7	+ 8.4

* Counties arrayed in order of per capita taxable wealth as in Table 1.

Local provision for schools is supplemented by state provision for schools in the form of state aid. The volume of state aids has grown from 1914 to 1934 in absolute volume but not appreciably in relation to the amount of school money supplied locally. That is, the increasing volume of state aid has not had the effect of reducing the amount of money that the localities are willing to levy for the support of schools. Thus in 1914 state aid constituted 18.8 percent of total expenditures in the eleven counties and in 1934 only 22.1 percent. Indeed, in 1933 the percentage had actually been lower than in 1914 or 16.8 percent.

These state aids had the effect that they were intended to have of more nearly equalizing educational opportunities for children of the public school age within the state. The ratio of state aid to local expenditures in wealthy Atchison County for the five-year period 1914-18 was 17.6 percent and for the later period 1930-34 was 23.7 percent. In Carter County, by contrast, the ratio in the earlier period, 1914-18, was 42.2 percent but in the later 1930-34 period was 135.7 percent. Thus the volume of state aids had grown much more in relation to locally collected funds for education in the poorer than in the wealthier counties.

The differential growth in state aids had, however, not been able to correct all inequalities in educational opportunity nor to iron out the differences in tax rates levied for education and probably did not represent an equalization of the cost for education as between urban and rural communities, migration considered. Such small facts as are known of rural-urban migration

indicate that over the long period the movement of people from farms to cities is greatest, in relation to rural population, from the poorer areas. This larger proportionate migration from the poorer areas results because the attaction of the city is greater for persons living in the poorer than for those living in the richer rural counties. It occurs in part also because the birth rates are much higher in the poorer than in the wealthier rural areas.

There occurs, therefore, the peculiar circumstance that the cities recruit a relatively larger percentage of the population of the poorer rural areas where the taxable wealth per capita is least, where the number of children in relation to adults is highest, and where adults are least well able to bear the cost of rearing the children to which they persist in giving birth. Cities in Missouri have objected strenuously to the fact that tax monies drawn from their environs are spent subsidizing education in the poorer areas. In actual fact the poorer areas are not adequately compensated for the costs of rearing and educating children for subsequent city life. The point of view of the cities is that the poverty of the poorer areas is a spur to badly needed adjustments in settlement. Too generous subsidies tend to perpetuate rather than eliminate such maladjustments as are obvious at present.

Road Expenditures

Like school expenditures road expenditures varied almost exactly in relation to differences in assessed valuation per mile of roads. In fact, there was only a narrow difference between the ratio of expenditures on roads to total assessed valuations among the eleven counties studied. Wealthy Atchison County spent $.29 per $100.00 of assessed valuation on roads and poor Shannon and Carter counties spent $.27 and $.33 respectively, or an essentially equal amount. Furthermore, the program of state road construction had gone far toward equalizing the quality of the road systems of poor and rich counties. State aid to schools, had only partially equalized public school educational opportunities. By contrast the percentage of farms on all-weather roads was as high in Carter and Shannon counties as it was in Atchison County though there were wide discrepancies among the eleven counties in this respect. Furthermore, the percentage of total mileage of state constructed and maintained roads was, if anything, greater in the poorer than in the more wealthy counties. The need for equalizing expenditure on roads as between the more and less wealthy counties of the state is, therefore, less pressing than was the case for schools. In fact, the

poorer counties appear to have a slight advantage over the wealthier in respect to roads.

Expenditures for Salaries and Fees

Expenditures for salaries and fees follow not so much assessed valuations as they do populations. Even counties with low assessed valuations had great expenditures for salaries and fees if their populations were great. Newton County with the population of 27,000 spent more for salaries and fees than Macon County with a population of 23,000, despite the fact that the assessed valuation of Newton County was only two-thirds as great as that of Macon County.

However, salaries and fees expenditures per $1,000 of assessed valuation was very much greater in the poorer than in the more wealthy counties. Shannon County, which had the greatest salary and fee expenditures relative to assessed valuation, spent $2.85 per $1,000 of assessed valuation for this purpose. Atchison County spent almost exactly one-fourth as much or only $.71 per $1,000 of assessed valuation. These figures, however, do not reflect entirely the differences in cost since in the poorer counties the roster of officers is kept to a minimum while in the more wealthy counties many of the newer services of government such as county agricultural agents, county home demonstration agents, school nurses, and county nurses, etc., are more often provided.

Pauper Expenditures

Just who is a pauper and just what condition constitutes pauperism has never been defined rigidly either for or by the county courts in Missouri. Consequently no uniform enumeration of paupers as between counties can be offered. It does, however, appear from such statistics as are available that in the pre-depression period the poorer counties contributed to the support of a greater number of people maintained upon poor relief rolls than did the wealthier. Thus in Carter and Shannon counties somewhat more than seven persons per thousand of the population were on the pauper rolls during the years 1927 to 1930 while in much wealthier Atchison County the number was only 2.3.

Apparently, however, the wealthy counties kept a larger number of their indigents in state hospitals; that is, Atchison County maintained 3.43 persons per thousand of the population in state hospitals while Shannon and Carter maintained respectively 1.65 and 2.18. Some of these institutionalized people were indigent

insane and a few of them were pulmonary tuberculosis patients. One concludes, nevertheless, that while the number of paupers was less in the wealthier counties their maintenance was on the whole better.

Furthermore, despite the larger number of paupers in the poorer counties the expenditures per $1,000 of assessed valuation were no greater and for the most part not as great as in the more wealthy counties. This holds true for both the locally maintained pauper class and those that were institutionalized.

During the depression years pauper problems took on certain additional aspects. For instance, the poorer counties were distinctly less able to take care of their own relief problems than were the wealthier counties. Thus local provision for poor relief in Carter and Shannon counties during the years 1933-34 constituted only 3.7 percent and 3.5 percent of the total expenditures for that purpose while state and federal governments provided 96.3 percent and 96.5 percent respectively. By contrast in Atchison and Johnson counties at the other end of the list the local governments supplied respectively 18.6 percent and 12.8 percent of total expenditures; state and federal governments providing the remainder.

But if the pauper problem in the poorer counties was deep before the depression it became deeper as the depression progressed. Poor land attracts poor people and, conversely, rich land with the close-knit ownership that characterizes its possession attracts them not at all. During the five-year period 1930-35 farm population gained 27.7 percent in Carter County, 20.2 percent in Newton County, and 8.4 percent in Shannon County in the very areas where the per capita taxable wealth was the lowest among the eleven counties surveyed. The contrasting situation for the two wealthiest counties, Atchison and Johnson, is remarkable. Farm population in Atchison declined 2.8 percent and in Johnson County 2.9 percent during this same period. Depression migration has, therefore, seen the dumping of many of the urban paupers into the poor land counties and will give these counties for a long period after the waning depression a continuing relief problem, the financial burden of which they have every right to ask the state and federal governments to discharge. On the other hand, the close-knit ownership of the rich counties had essentially zoned them in advance against such pauper entrance. They are, therefore, in much better position to become self-supporting with respect to their poor when a period of prosperity again appears as indeed it has already appeared.

Other Expenditures

The analysis of the expenditures of other aspects of governmental services such as those for criminals, hospitals, and insane and so on brought out no strikingly new features. On the whole, the most striking results of the inquiry into these financial phases of rural government in Missouri are the association in areas of least taxable wealth, of high tax rates, low quality public services, high birth rates, sustained or increasing population, heavy tax delinquency, and relatively meager provision for public services. By contrast, tax rates are low, the quality and abundance of public service is high, birth rates are low, population declining and per capita wealth more stable in the richer counties. To these circumstances must also be added the fact that the poorer counties are the dumping place of the depression so that, to the often intense struggle of the poorer counties with the problems of governmental finance in normal times, is added the unwanted need to provide even more services during periods when they are least able to expand their expenditures.

Trends of Expenditures and Associated Factors

Perhaps as important as the analysis of expenditures at a given time is an investigation of trends and growth of governmental costs. Again the striking contrasts are between the wealthier and the poorer counties. Total expenditures in all the eleven counties increased till 1928 and thereafter fell rapidly to 1934 though in the latter year they were still 79 percent above 1914. Dividing the eleven counties into three groups of high taxable wealth, medium taxable wealth, and low taxable wealth, the net growth of expenditures over the period 1914-34 was greatest in those of medium taxable wealth and least in those with lowest taxable wealth. Indeed, in Shannon and Carter counties 1934 expenditures were only 17 percent greater than in 1914 whereas in the two more wealthy groups they were respectively 165 percent and 182 percent.

The greatest net growth over the period occurred in the case of expenditures for paupers which ended up the period in the eleven counties 296.6 percent above their 1914 level and grew practically continuously every year throughout the period. Net growth, on the other hand, was least in the case of roads for which expenditures were only 22.3 percent higher in 1934 than in 1914.

Considering, however, the volume of expenditures, the greatest

growth was unquestionably for schools. School expenditures con-
stituted somewhat more than 50 percent of the total throughout
the period and ended up in 1934 approximately 200 percent of
the 1914 level.

Underlying these trends of expenditures have been, in addition
to the secular advance of governmental expenditures generally,
the growth in assessed valuations on the one hand and popula-
tion changes on the other.

The growth of assessed valuations was greatest for the coun-
ties of moderate per capita taxable wealth and least for those
with lowest per capita wealth. Furthermore, when population
growth is measured by number of enumerated school children
(the only relevant data available upon an annual basis), a strik-
ing fact is revealed. In the four counties of highest taxable
wealth, the number of school children in 1934 was less than 75
percent as great as in 1914. In the poorest counties, on the other
hand, the enumerated school children in 1934 was just a little
bit more than 100 percent of the 1914 figures.

Taking these data on assessed valuations and population
growth together one is forced to the conclusion that during the
two decades included in the study the poorer counties have lost
ground relative to the more wealthy in respect to taxable wealth
per capita.

It is not surprising, therefore, to find also that tax delinquency
mounted much more rapidly in the poorer counties and that
while the volume of outstanding, unpaid, and often protested
warrants are an insignificant factor in the wealthy counties, they
have become a tremendous burden in the poorer. One county,
Reynolds, not included in the present study, after issuing
$60,000 of bonds to fund outstanding and protested warrants in
July, 1931, found itself faced on October 1, 1936, with a total
of $50,237 of outstanding, unpaid warrants that had accumu-
lated chiefly between 1932 and 1936.[3]

Considerations of Efficiency

The expenditures data tabulated in the study were not such
as to lend themselves easily to a determination of how efficiently
the conduct of government in the various counties has been. In
one case, however, data on the cost per school child with varying
average daily attendance in districts in Phelps and Dent coun-
ties, Missouri, were tabulated. These data indicated, as have

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[3] Data for Reynolds county from an unpublished study by Howard Lang and R. J. Silkett,
Missouri Land Use Planning Section Resettlement Administration.

those of so many other studies, that the school with a low average daily attendance is a high cost school. Thus schools with an average daily attendance of 10 pupils had a daily per pupil cost of $.40 while in schools with an average daily attendance of 30 pupils or more costs declined to between $.10 and $.15. It appears, therefore, and indeed it was the studied judgment handed down by a previous survey of efficiency of school administration in Missouri, that the number of school districts, particularly rural school districts, in Missouri should be very materially reduced so as to increase enrollments per school. In many counties at present there are from 50 to 90 school districts. The survey referred to recommended that this number be cut to not more than a half dozen in each county (often to only two or three in each county) and that the districts be large enough not only to provide a much greater attendance in the grade schools but to support a high school with approximately 500 pupils as well.

In much the same vein a study of the efficiency of road administration in Missouri that a Committee of the Highway Engineers Association of the state had made a short time previously offered the following comment:

". . . the present system of road construction and maintenance is largely obsolete and not fitted to present day demands of transportation. It is a hold-over of horse and buggy days. It is overweighted with superfluous machinery and divided into superfluous districts, townships, and other types of administration. This unsatisfactory system is the outgrowth of efforts at road building which antedate the motor car and modern methods of highway development."

They found further that road administration was in the hands of some 2,328 districts. It was the recommendation of this committee, therefore, that intra-county road districts be abolished and that the county be uniformly established as the administrative unit for local road building and maintenance purposes.

Professor W. L. Bradshaw of Missouri University in a further relevant study[4] relating to 24 township organized counties recommended that townships be abolished because of the greater expense of operation when government is organized upon a township as contrasted to a county basis.

In an even more recent study and one still unpublished, Pihlblad and Stokes recommend the abolition of county almshouses and the adoption of the district plan. They support their recommendations upon two bases. First, the number of inmates of

[4] Township Organization in Missouri—University of Missouri Studies, Volume XI, No. 4, October, 1936.

most almshouses in Missouri is at present below that needed for economical operation. Second, the Old Age Pension Act recently passed by the State General Assembly, granting monthly payments to indigent persons over 70, will still further deplete almshouse population making it more than ever advisable to abandon the present day plan of county almshouses in favor of district institutions supported conjointly by a number of counties.

In addition there have been a number of statutes aimed at the consolidation of county offices particularly in those counties where the volume of business is small because of low assessed valuations or low population. The county collector was, for instance, instructed in a recent law to take over the duties of the county treasurer with no additional compensation in certain counties. For such new services as the county agricultural and county home demonstration agents the State Agricultural Extension Service has already in a number of instances seen fit to bracket two or more counties into single districts to be served by the same agent.

Despite these far-reaching excellent studies it seems safe to say that we know altogether too little about the efficiency of operation of government in Missouri and that a vast amount of research is needed to extend our information upon this point. The present study unquestionably contributes much more to an understanding of problems of equity than those of efficiency.

Expenditures and Governmental Reform

The present study has, however, contributed somewhat to the understanding of the advisability of certain programs of reform of local government that are now being widely advocated. Perhaps the most important of these and the one most insistently forced upon the attention of voters is that of county consolidation. The analysis of expenditures by functions is pertinent in relation to this purpose.

Advocates of the scheme sometimes fail to distinguish between those types of costs that will and those that will not be appreciably affected by a consolidation movement. From the functional analysis of the present study we are able to determine much more accurately what the effects will be. In the first place, school costs which accounted for 53 percent of the expenditures of local governments in Missouri between 1930 and 1934 would apparently be affected hardly at all by consolidation since these costs are for the most part at present determined by the school districts rather than by the county. The only cost for schools that might

be affected by county consolidation would be that for the school superintendent which amounts in total only to a very small percentage of the local expenditures for public school education.

Road expenditures which account for approximately one-fifth of the total would also be only very modestly affected. Most of such costs are for construction and maintenance. County consolidation has no effect on these. It might reduce slightly the costs of administration if at the same time that the counties were consolidated the intra-county road districts were abolished and road expenditures placed in the hands of the county.

Perhaps more than any other one cost salary and fee expenditures might be reduced from county consolidation. It is true that these expenditures are a smaller percentage of total expenditures in counties with large assessed valuations than in those counties with small assessed valuations. However, the present study indicates that salary and fee expenditures respond to increases and decreases in population more than to any other one thing. A rising total expenditure for salaries and fees would therefore accompany a decline in cost in relation to assessed valuation.

Expenditures for paupers and insane appears to be almost wholly a function of the size of the population and apparently would not be materially affected by the consolidation of counties as such. However, the larger county formed by consolidation would presumably be enabled to maintain its almshouse more economically than the previous smaller counties. This effect could, however, be reached by provision for district almshouses.

Expenditures for criminals appear also to be more nearly a function of the size of the population than of any other one thing and there is little reason to believe that any material saving would be affected by county consolidation in relation to this type of expenditure.

One possible great saving and one counted upon heavily by advocates of this particular type of reform is that in connection with the seat of government. One courthouse would be much less expensive to maintain than a number though perhaps there would not be a proportionate decline in costs.

In connection with this saving and with any other savings to be derived from county consolidation, however, one point is commonly lost to view. One must consider not only the cost and savings for government but the cost and savings to the community as well. That is, the savings in governmental cost resulting from consolidation would by no means be net savings. Despite

the fact that the automobile has displaced the horse and buggy, the cost of traveling under modern circumstances upon the normal rural road is hardly less than $.03 per mile. Against such small savings as can be made by consolidating therefore, there must be placed the additional cost for many citizens of making the much longer average trip to the county seat that any serious program of county consolidation would necessarily involve. Not all county seat business of farmers and other citizens needs to involve a special trip for that purpose but perhaps it would not need the cost of very many special trips to equal the reduction in cost incident to county consolidation. That is, the net savings to the community would always be less than the net savings in governmental costs.

Expenditures, Population Distribution, and Land Use

The really critical problem of local government posed as a result of this analysis of local governmental expenditures in Missouri is that of government in the poorer Ozark counties of the state. As stated above, it is in these counties of lowest taxable wealth per capita, highest tax rates, and highest birth rates, that the effort to maintain government under its present forms is most intense and where the breakdown of government is most nearly imminent.

County consolidation would have little effect in bringing about a solution because the really important difficulty is one of poverty. No amount of consolidating of poverty stricken counties in Missouri will make the resulting unit of government anything but poverty stricken for the simple reason that the poorer counties lie in one great contiguous block. In other words county consolidation increases total valuation, but affects not at all the per capita valuation and it is in these differences in per capita valuation that the critical problems of equity lie.

There are two things that must be done if any material accomplishment is to be made on the program of governmental reform in Missouri. Either the population must be redistributed so as to give greater equality in underlying taxable wealth per capita or what amounts to the same thing, resources per capita must be redistributed to accomplish the same end.

Resettlement is a means to such redistribution but any program of resettlement is faced with the fact that not only are the fertility rates greatest in the poorest areas but a perverse migration has tended to increase the population during the depression

in those very areas where the resources-population ratio is already lowest.

In relation to population two general types of programs are needed. First, is the negative one of raising bars against migration into the poorer counties. Zoning is a part of such a program though it appears to have not too much promise in Missouri. Incorporating the land into much firmer ownership systems is an acceptable alternative and has been already inaugurated in Missouri in the establishment of eight National Forest Purchase Units embracing some 3,300,000 acres all located in the Ozark counties.

A second type of program is a positive one of facilitating emigration from these counties. Such a program has only the most embryonic beginnings and no genuinely dependable techniques have apparently yet been established. The recently published "Study of Migration and Economic Opportunity"[5] by Goodrich and others, represents an early investigation of the need for a migration policy for the nation.

The other side of the program, viz., that of increasing the resources in relation to population has much to recommend it. These Ozark counties are often poor because of years of despoiling forest and soil resources. In many poverty-stricken counties from 50 to 75 percent of the land is virtually unused for any genuinely productive purpose. It lies idle producing only a scanty and desultory pasturage and practically nothing in tree growth.

A "Forest Restoration in Missouri" survey now in progress under the auspices of the Missouri College of Agriculture, the State Planning Board, the Forest Service, and State American Legion, affords some pertinent data on what may be accomplisheed by again bringing into fully productive use between 12,000,000 and 15,000,000 acres of now idle forest land. While the survey is still in its preliminary stages, it indicates that fully restored forests will bring back to the state between $75,000,000 and $100,000,000 of public and private wealth. This includes not only the forest wealth itself but that of the industries that would need to be reestablished when timber production again reaches a high level. These figures are, of course, highly tentative since it will take at least a half century to restore the forest land to a fully productive condition once more. Nevertheless, the possibilities resident in this type of program are admittedly impressive and would go far to restore fiscal health in a region now noted for its weak local governments.

[5] University of Pennsylvania Press, 1936.

REORGANIZATION OF COUNTIES[1]

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In discussing the possible savings through consolidation and reorganization of counties, it is necessary to consider three distinct phases, namely: county consolidation, the county manager plan, and state administrative supervision of counties. These three phases will be described in the order of their enumeration.

Savings Through County Consolidation

It is frequently pointed out that government is operated through a large number of "units" each of which elects its own governing board, collects its own taxes, and renders one or more services. Thus, Texas has in addition to the state government, 254 counties; 580 cities and towns; 7,200 school districts, and 271 irrigation, drainage, levee and other districts; making a total of 8,306 local units of government. There are also more than 400 road districts which have some of the characteristics of a governmental unit.

The number of counties seems to have attracted particular attention in numerous instances. In this connection, a comparison of conditions in 1876 (when the present Constitution was adopted) with those existing today is sometimes made as an argument for fewer counties. In 1876, for example, 20 to 25 miles was recognized as a day's travel. Moreover, there was no rural mail service and no telephone service; consequently, court houses were located so that citizens could make the trip to the county seat and return the same day. But these conditions no longer obtain. The development of the automobile and all-weather roads have reduced the importance of distance. Then too, the mail service and the telephone have eliminated many trips to the court houses. It is a matter of common observation that a smaller number of counties could do the work, under present conditions.

The maintenance of the smaller counties, especially, is unduly expensive. This arises chiefly from the fact that the Constitution of 1876 created a form of government which applies to all counties without regard to size. Each county is required to elect 18 or more county-wide or precinct officers. Each county maintains

a court house and jail, and provides certain required services.

Not all the costs of government would be affected by a consolidation of counties. For example, there would be no decrease in the mileage of roads, no decrease in the number of deeds to be recorded, and no decrease in the amount of property to be assessed. The only way to save money in carrying out such work is through the provision of a more efficient plan of government and this may or may not accompany consolidation. The costs which are affected by consolidation are those which are found in all counties, but are higher in the smaller counties.

A study based on the expenditures of 38 typically rural counties, for the year 1933 indicates that consolidation would provide substantial savings.[2] The chief saving is secured through a reduction in the number of county officers elected. Other costs included are the maintenance of buildings, court reporters' salaries and expenses, and jury expenses. The population of the 38 counties ranged from 2,197 to 77,777 in 1930. The assessed valuation, according to the 1933 tax rolls, varied from $1,375,000 to approximately $45,000,000.

In round numbers, the average county of the sample group had an area of 900 square miles, a population of 20,000 and an assessed valuation of $12,000,000.

Using the expenditures of the average county as a standard which should be achieved from an actual consolidation provides the following estimate of savings: $2.91 per capita in counties having less than 5,000 population; $1.52 per capita in counties having 5,000 to 10,000 population; $.52 per capita in counties having 10,000 to 15,000 population; and $.30 per capita in counties having 15,000 to 20,000 population. That these are conservative estimates is indicated by the fact that the per capita costs of the counties having the largest population (the six counties having more than 35,000 population) are $.45 per capita lower than the average cost which is used as a standard. The total of the per capita costs affected by consolidation amounts to $1.32 for the group containing these six counties, whereas the average for the 38 counties is $1.77 per capita.

The $2.91 per capita saving which is indicated for the smallest counties amounts to $14.55 per family—or $7,889 per county. This amount is 21 percent of the total costs of county government, 25 percent of the operating costs, and 63 percent of the

[2] H. C. Bradshaw and L. P. Gabbard, *Possible Savings Through Changes in Local Government*, Texas Agricultural Experiment Station Bulletin No. 540.

costs affected by consolidation. As the population increases the savings gradually decrease and largely disappear when a population of 35,000 to 40,000 is reached.

The opportunity for saving through the consolidation of counties is emphasized by the fact that 172 counties had less than 20,000 population in 1930. More specifically, 46 counties had populations less than 5,000; 50 counties had 5,000 to 10,000 population; 47 counties had 10,000 to 15,000 population; and 29 counties had 15,000 to 20,000 population. Likewise 67 counties had less than $5,000,000 assessed valuation and 161 counties had less than $10,000,000 assessed valuation.

In addition to the reduction in such costs as salaries and maintenance of buildings, there are various other arguments for the consolidation of counties. In the first place, the creation of a county which is larger in area, population, and assessed valuation, provides a unit which is more nearly capable of supporting all necessary and desirable services.

In fact, a consideration of the physical characteristics of a county will allow one to predict with considerable accuracy the financial support which a particular service will receive. This means that a county must meet certain minimum standards of population, and assessed valuation before particular services can be established and properly maintained. If a "weak" county does succeed in establishing one of these services, the lack of support stifles its development and sometimes causes it to be abandoned entirely.

This situation is best illustrated by experiences in establishing health and library services. Officials of the Texas State Department of Health believe that a county should have a population of 20,000 before it establishes a county health unit. Such a unit is composed of a full-time doctor, nurse, sanitarian, and necessary clerical help, and is capable of providing a complete public health program. Experience has demonstrated that a smaller staff cannot care for all the needs, but that such a staff should serve a population of at least 20,000 in order to be fully occupied. Even a county of 20,000 population is barely able to finance such a program under present conditions. Hence, from the financial standpoint larger counties are very desirable. As the population increases, the staff can be increased sufficiently to meet the demands. In 1936, only 12 county health units were in operation, in Texas. These units served a total of 14 counties since one unit was on a cooperative basis and served three counties. In 24 other counties, a county nurse was maintained. Hence, 38 counties were

making some effort to provide public health services. This is far from an outstanding record.

Much the same situation is revealed in the case of county libraries. Officials of the State Library recommend that a county have an assessed valuation of $10,000,000 or more before it attempts to establish this service. It is also recommended that no library operate on less than $.50 per capita, and that no budget be less than $5,000 in total. Consequently, in order to raise the $5,000 budget it would be necessary for the minimum sized county to devote five cents of the general fund rate to library purposes. Considering the demands on county governments and the present tax limit laws, very few counties can devote this much to libraries. Hence, the possibilities of securing adequate support is considerably greater as the valuation increases beyond the minimum figure of $10,000,000. Counties which meet these standards of assessed valuation will ordinarily have a population of 20,000 or more.

The same principles apply to the maintenance of such institutions as county farms and county jails. For example, it has been reliably estimated that a county farm cannot be economically operated for fewer than 40 persons. But many of the farms operated by Texas counties do not approach this standard. Of the 38 counties visited in 1935 only 11 were maintaining farms and less than half of these were keeping 40 persons. Likewise, four of the 38 county jails had an average daily prison population less than one. Ten other counties averaged less than five prisoners per day. The maintenance of a jail for such a small number of prisoners is an extremely heavy burden for the smaller counties.

The difficulty of securing a consolidation of counties has led to a type of cooperation which is called functional consolidation. Under this plan, two or more counties which maintain their separate identity, agree to pool their resources in order to support a particular service. The same result may also be secured by direct action of the state. For example, the state may group several counties for the performance of a particular service. In this case a part or all the cost is prorated among the counties of the group.

Of the 38 counties visited, 11 were cooperating with 13 other counties in providing four distinct types of services. Six counties cooperated in feeding and guarding prisoners; two counties cooperated in maintaining a county auditor; 14 counties cooperated in providing agricultural agents; and two counties cooperated in maintaining hospital services. Judging by this group, approxi-

mately one-fourth to one-third of the counties in the state are functionally consolidated with another county in furnishing one or more services. In addition to the cooperation between counties, the study also revealed 76 cases of cooperation between the 38 counties and other governmental units within their boundaries. The counties assessed or collected taxes or both for six villages and 62 independent school districts. The eight other cases involved cooperation in maintaining nurses, hospitals, county farms, humane officers, and libraries.

One of the outstanding cases of cooperation through direct action of the state has occurred in Virginia, where 23 separate county farms have been replaced by four district farms. According to the State Commissioner of Public Welfare, the per capita cost was reduced by 50 percent during the first five years under this plan despite the fact that modern equipment, nursing and medical service, and standardized diet and care were provided. Virginia has also established 14 combined school divisions involving 29 counties, and several district health units involving both counties and cities.

Savings Through the County Manager Plan

It has been pointed out that the consolidation of counties does not change the form or plan of government. That following consolidation the same cumbersome system exists unimpaired, but operates in a larger territory. The defects of the present plan may be summarized as follows:

1. Too many officials are elected. This means that the voter is confused by a long ballot, that some clerical workers are elected who might better be appointed, and that salaries are not in accordance with services rendered.
2. There is no county executive; no one official has the authority to coordinate and supervise the work of all offices. Each official traces his responsibility directly to the voters and not to an executive.
3. Policy formation and administration are confused. The Commissioners' Court, as the governing board, decides what is to be done thereby determining policy, and the individual Commissioners serve as administrative officers in the maintenance of roads. This situation inevitably causes road work to be emphasized while other important services are apt to be neglected by the Commissioners' Court.

The use of this defective system results in excessive costs, and general inefficiency. Related work is done by unrelated offices; clerical employees cannot be transferred from one office to another to take advantage of slack seasons; responsibility and authority are diffused among several officials; and the resulting

pattern is unduly confusing to the public. Of the several plans which might be suggested to replace this defective system, the county manager plan is regarded as the most desirable. Under the county manager plan, a small board is elected to represent the people. The board in turn appoints a county manager and places upon him the responsibility of administering the services rendered by the county. In order to keep the lines of authority clear and definite, the manager is required to appoint his own subordinates, and to answer to the county board for their conduct. The county manager plan has the following distinct advantages as compared to the present system:

1. The county board deals only with the formulation of general policy, and leaves the execution of that policy to the county manager. Since the members need not devote their full time to the county affairs, better qualified men should be secured.
2. The county manager is the executive employed by the board to carry out its decisions. He is appointed for an indefinite term, but may be discharged by the board at any time. A qualified manager saves a great deal of money by employing the best methods available.
3. Since minor clerical officers are no longer elected, but are appointed by the county manager, definite qualifications may be prescribed, and the number of employees may be varied to suit the needs of the particular county. Employees may also be shifted from one office to another as the volume of work fluctuates.
4. The simplicity and responsiveness of the plan may be expected to stimulate interest in government. It is a democratic plan in terms of results, because the control runs directly back to the people along visible lines. Since responsibility is definitely placed and accompanied by sufficient authority to get results, any failure to achieve efficiency can be seen and immediately corrected.

Estimates of absolute savings under the county manager plan must necessarily vary with the conditions obtaining in the particular county, hence no general statement can be made. But an analysis of expenditures in certain counties of 20,000 to 25,000 population indicates the following savings: (1) The most readily apparent saving is in the salaries of elective officials and their deputies. In 1933, these costs amounted to $35,330 per county. It is estimated that this work could be performed under the county manager plan for $20,000 to $25,000, or less, depending on the salary scale used. In smaller or larger counties the absolute amount of savings would differ, but on a percentage basis, it should compare very favorably. (2) There should also be a substantial saving in the purchasing of equipment and supplies, and in the operation of such services as roads and bridges. In many instances this saving would equal or exceed the savings in

salaries. (3) A third important saving arises from increasing the efficiency of all services. This means that more and better services are received from the tax dollar, but it does not mean a reduction in the taxes paid.

The effect of such reductions on the tax rates is quite important. For example, in the county of $10,000,000 assessed valuation, the tax rate may be reduced by one cent for each $1,000 reduction in expenditures. Thus, a saving of $20,000 per year would allow a $.20 reduction in the tax rate. The saving would be no less real if the citizens decided to maintain the present tax rate, and used the savings to provide such services as health units and libraries.

Has the county manager plan ever been tried? Yes, its older brother, the city manager plan, is now operating in 438 cities in the United States. In the 27 years since the plan was started, only 21 cities have abandoned it. The county manager plan is now operating in seven counties in the four states of California, New York, North Carolina, and Virginia. Probably 50 to 60 additional counties have made a real beginning by adopting some of the features of the manager plan. Considering the greater difficulties involved, it is believed that the early growth of the plan in the counties is about as rapid as it was in the cities. The constitutions in a number of states, including Texas, now permit the adoption of the manager plan by counties.

Savings Through State Administrative Supervision of Counties

Because of the peculiar position occupied by the county, there is an opportunity for improving county services through promoting closer relations with the state. Legally, the counties are subdivisions of the state. They are created by the legislature for the purpose of enforcing state laws, assessing and collecting state taxes and other duties. Incidentally, of course, the counties are allowed to provide certain other services on their own initiative, but the authority to do so is delegated to them.

Thus, the state has a real interest in most of the work carried out in the counties. For example, the failure of locally elected officers to collect taxes immediately affects the ability of the state to meet its obligations. Likewise, the failure of any local unit to pay its debts has an immediate effect on the credit of the state. Similarly, any weakness in the local enforcement of law breeds disrespect for law in general.

The failure of the state government to take more effective responsibility for the actions of its locally elected officials has resulted from a combination of three factors. In the first place,

the state functions through a legislature, the members of which are elected from relatively small areas. Consequently, these members are apt to think in terms of their districts. This often means that the counties control the state instead of the state controlling the counties. In the second place, the locally elected officers, like the statewide officers, are provided by the Constitution of 1876 and, therefore, are largely independent of all control except from the voter. In the third place, the short terms of both state and county officers means that they must leave the office about as soon as they become familiar with their duties. A great deal would be gained by retaining qualified officers as long as their services are satisfactory.

The State Legislature and the various state officials have not been unmindful of this problem. Every session of the legislature results in the passage of a number of laws affecting the relations of the state and its local units. It is believed, however, that the emphasis has been wrongly placed. In the past, the supervision exercised has been "legal" and not "administrative" to any large extent. Legal supervision has been exercised through the passage of laws placing certain duties upon county officers, requiring the officers concerned to take an oath to carry out the duties, and making the officers subject to the courts for nonperformance.

Experience has demonstrated that by the time the courts take action, the damage is beyond repair. Moreover, the great majority of the questions about which county officers need assistance do not involve legal problems, and the courts are not qualified to advise. Preventive, continuous, and informed supervision is needed in place of the curative, occasional, and uninformed supervision now exercised by the courts.

Existing legal provisions apparently are designed to secure uniform business methods in all counties. Actually, however, uniformity has not been secured because officials of each county have been allowed to place their own interpretation on uniform provisions. This is especially true of such "business" procedures as collecting taxes, keeping accounts, and purchasing equipment and supplies. All this work corresponds to work which business firms must carry on. Consequently, the most effective methods devised by business firms should be applied to government. The application of such methods should strengthen tax collection procedures, insure accurate and comparable accounts, and provide effective purchasing of equipment and supplies.

The solution seems clear enough. The state should provide a definite agency to which the counties and other local units could

appeal for advice and assistance from the state. Whenever a new law is passed, whenever a new county officer is placed in office an opportunity arises to secure better results simply through the provision of advice and assistance. As long as this opportunity is neglected, local officials can hardly be blamed for operating their offices about as they choose.

The state should take the lead in developing improved practices in such work as budgeting; accounting and auditing; assessing and collecting taxes; and in creating and administering indebtedness. All these duties might well be given to a bureau of local affairs which should be created for this purpose. The staff provided should work with the local officers and gain their confidence and cooperation through demonstrating their ability to improve results. Such a bureau should be able to save several times its annual cost. In addition to the work which has been mentioned, the state should assist in securing better qualified employees, and in securing better enforcement of state laws.

An example of possible savings is found in the report of the Joint Auditing Committee in 1936. This committee was composed of representatives from the offices of the state auditor and the state comptroller. The committee was created to examine claims against the state which were held by various "fee" officers. The audit of $920,000 of these claims resulted in an actual saving to the state of $476,000. Of this amount, $329,000 of claims against the state were refused, and $147,000 in amounts due the state were collected. An additional amount of $366,000 in amounts due the state from fee officers was also set up; consequently, the total actual and "contingent" saving from this audit amounted to $842,000 (that is $476,000 plus $366,000). It is also significant that this audit has had several other beneficial results. The legislature has made some needed changes in the fee laws, the comptroller has started auditing all current fee bills before they are paid, and the fee officers themselves have been instructed concerning the fees legally due them.

Considering the State of Texas as a whole, it is believed that a program giving each consolidated county a minimum population of 20,000 is highly desirable. Such counties should have lower per capita costs and should also be more nearly capable of supporting the necessary and desirable services. Further, it is believed that following consolidation, the county manager plan or a similar plan embodying its essential principles should be applied. Finally, it is believed that increased supervision of county affairs by the proper state agency or agencies should be developed.

WHY THE DUST BOWL?

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FARM CREDIT ADMINISTRATION, WICHITA

So much has been written, said, and pictured of a sensational nature concerning the Dust Bowl that a few prose statistics may be useful in gaining a better perspective of the situation. Drought and dust are not new in the Great Plains area. Judging from the meager historical records available, the drought of recent years is not long or severe. Likewise, history teaches that the extreme droughty conditions of recent years is not likely to be permanent. Unfortunately history does not tell us when to expect a return to more normal weather conditions.

The Dust Bowl may be approximately defined geographically as that portion of the Great Plains having an average annual precipitation of less than 20 inches. The term "Dust Bowl" is usually applied to the southern half of this Great Plains area, in other words that portion of the area lying within the states of Oklahoma, Texas, New Mexico, Kansas, Colorado, and Nebraska. Similar conditions and similar problems exist in the northern half of the Great Plains region.

Large expanses of level to slightly rolling land of high fertility are characteristic of the Great Plains. The elevation generally in the Dust Bowl portion of the Great Plains varies from 2,500 to 5,000 feet. The climate is typical of similar large areas of land far removed from the modifying influences of large bodies of water. Temperature changes are extreme both from day to day and from summer to winter. Rainfall is very irregular, much of it being local in extent and often torrential in quantity. Average wind velocity is double that prevailing a few hundred miles eastward where intervening mountains and trees apparently modify the sweep of the wind.

Under these climatic conditions the effectiveness of precipitation is low. The following extract from a New Mexico Agricultural Experiment Station bulletin portrays this low efficiency.

During the 6 growing months, April to September, the evaporation from a free water surface at the Tucumcari Field Station averaged 55.446 inches per season for the 23 years, 1913-35. The average seasonal precipitation for the same 6 months of the year over this 23-year period was 12.66 inches. Evaporation was nearly 4.5 times the precipitation during this period. Evaporation from the soil is, of course, much less than from a body of water, but the figures indicate the importance of conserving the precipita-

tion by all practicable cultural methods that tend to counteract the drying action of sun and wind.[1]

Practically none of this area was settled by farmers prior to Homestead Act signed by Abraham Lincoln during the Civil War. The more arid portions were not settled until the Kinkaid Act of 1904 and similar acts permitting the homestead entry on tracts of 640 acres. Incidentally it might be pointed out that a mistake was made in the various homestead acts in supposing that 160 acres would provide sufficient land for a farm unit in the dryer portions of the public domain. The mistake was repeated in the case of the enlarged Homestead Act where the land was recognized as being suitable only for grazing purposes. A section, 640 acres, is not an economical ranch unit where carrying capacity of the pasture is often less than one cow per 40 acres.

The following data are presented for the purpose of giving a wider perspective than that gained from reading current news-

TABLE 1. 101 YEAR PRECIPITATION RECORD AT LEAVENWORTH, KANSAS, 1836–1936
Precipitation by Decades

Decade	Average Annual Inches	Per Cent of Average	Low Year Inches	High Year Inches	Number of Years *Above* Average
1836–39[1]	32.29	93%	26.28	38.45	1
1840–49	30.90	89	15.94	48.12	3
1850–59	35.15	101	24.40	59.65	5
1860–69	29.52	85	14.60	51.37	2
1870–79	40.10	115	31.26	52.06	8
1880–89	38.06	109	22.25	47.21	8
1890–99	35.29	101	28.49	49.75	4
1900–09	36.64	105	26.09	46.83	7
1910–19	33.57	96	28.04	41.96	4
1920–29	35.22	101	27.33	40.50	6
1930–36[2]	34.30	98	24.01	47.07	2
Total or Average	34.90	100	14.60	59.65	5

[1] 4 years, 1836–39.
[2] 7 years, 1930–36.
Source: Original data in the above and all subsequent tables from official reports of the Weather Bureau, United States Department of Agriculture.

paper headlines or that gained from experience in recent years. Most of our long-time weather records were originally kept at early army posts. The precipitation record started at Fort Leavenworth in 1836 is the longest record available for this part of the country. Leavenworth is in eastern Kansas, adjacent to but not in the Dust Bowl area. No records of this length are available in the Dust Bowl proper. One cannot state with complete accuracy that comparable variations in precipitation oc-

[1] Agricultural Experiment Station, Bulletin 244, of the New Mexico College of Agriculture and Mechanic Arts. November 1936. "Dry-Land Crops at the Tucumcari Field Station," by Donald R. Durnham, Associate Agronomist, United States Department of Agriculture, Superintendent, Tucumcari, N.M., Field Station and John S. Cole, Senior Agronomist, United States Department of Agriculture.

curred in the area several hundred miles westward from Fort Leavenworth a century ago. During the past 50 years the precipitation pattern has in general been similar but with marked deviations in certain years.

Thornthwaite states "apparently there is no cyclical recurrence of rainfall conditions which can be reduced to a simple mathematical expression that would permit forecast through extrapolation. Evidence derived from tree rings, lake levels, etc. indicates that in the Great Plains the period from 1825 to 1865 was a long drought with only occasional wet years. On the basis of that experience we may assume that the present drought might be prolonged for 20 or more years. Since rainfall averages now stand far below the normal, it is safe to forecast an increase throughout the drought area, but we have no reason to expect it immediately nor to regard the occurrence of a single wet year as the conclusion of the drought. Until further advance is made in the field of accurate long-range weather forecasts, there is no way of anticipating climatic variations."[2]

The above table of precipitation by decades at Fort Leavenworth, Kansas, for the 101-year period, 1836 to 1936, shows that the 1840's and 1860's were droughty. The 1870's averaged 15 per-

TABLE 2. 70 YEAR PRECIPITATION RECORD AT LAS ANIMAS (FORT LYON), COLORADO, 1867–1936
Precipitation by Decades

Decade	Average Annual Inches	Percent of Average	Low Year Inches	High Year Inches	Number of Years *Above* Average
1867–69[1]	10.46	86%	8.02	12.21	1
1870–79	11.76	97	4.54	16.97	4
1880–89	12.19	100	8.79	15.70	6
1890–99	9.90	82	2.79	15.63	2
1900–09	13.65	112	8.97	16.95	7
1910–19	14.27	118	9.83	19.27	6
1920–29	12.89	106	7.46	21.39	4
1930–36[2]	10.30	85	6.62	14.73	2
Total or Average	12.14	100	2.79	21.39	5

[1] 3 years, 1867–69.
[2] 7 years, 1930–36.

cent above normal immediately following the 1860's which were 15 percent below normal. There does not appear to be any short time cyclical pattern in the precipitation record. Data are not available to prove or disprove the authenticity of cycles 50 or more years in length. These data serve to point out how inaccurate even a lifetime of experience with climatic conditions may be. "Hardly a man is now alive" who remembers the drought of 73 years ago when only 14.6 inches of precipitation was received

[2] Referred to in "The Future of The Great Plains." See footnote 3.

at Fort Leavenworth, Kansas, in 1864. This record low exceeds by nearly 10 inches the severest drought of any recent year at that station.

The 70-year record at Las Animas, Colorado, originating at old Fort Lyon, in 1867 shows much the same characteristics as the Fort Leavenworth record. The deviations from normal are not identical. The present drought is more severe and continuous in the Dust Bowl area than that experienced in the more humid sections farther east as indicated in the above and following tables. Sometimes droughts in the Great Plains area are severe

ANNUAL PRECIPITATION AT DODGE CITY, KANSAS 1875 - 1936

Period	1875-79	1880-89	1890-99	1900-09	1910-19	1920-29	1930-36	Ave. or Total 62 years
Average inches	17.47	22.49	20.81	20.59	17.58	22.89	16.00	20.02
Percent of ave.	87%	112%	104%	102%	88%	114%	80%	100%
Years above ave.	1	5	5	4	3	7	0	25-40%
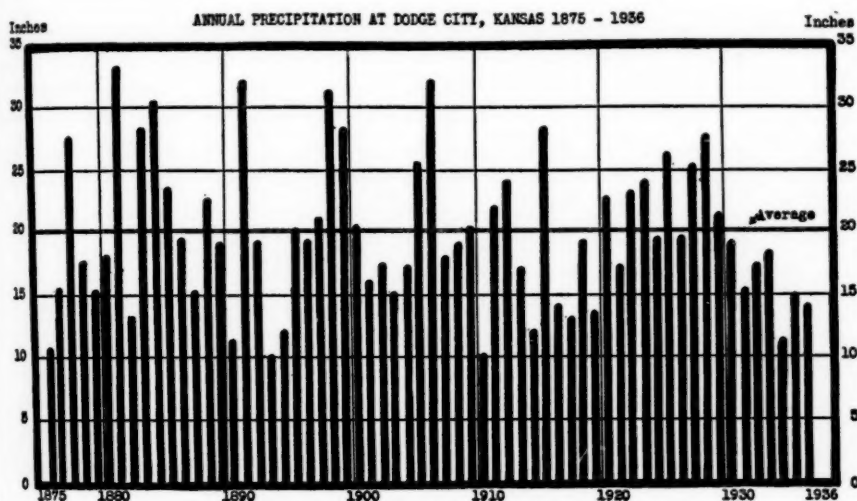
Average Annual Precipitation by Ten-Year Periods

and widespread in character, at other times they are very local. Due to the local character of much of the precipitation, drought areas in any given year may fade into areas of above normal precipitation within relatively short distances.

Perhaps of particular significance are the years of above normal precipitation. In the Great Plains area where the principal limiting factor in crop growth is moisture, years in which the precipitation is above normal or particularly well distributed for plant growth oftentimes produce increases in crop production far in excess of increases in precipitation. From this point

of view the period from 1900 to 1930 appears to be slightly above average, 17 years out of 30 being above average precipitation at both Leavenworth, Kansas, and Las Animas, Colorado.

Extreme variations in precipitation and lack of a definite short-time pattern are pictured in the graph of annual precipitation at Dodge City, Kansas, 1875 to 1936. This is one of the longest weather records available in the Dust Bowl area. The Dodge City data is generally typical of the rainfall pattern and recent experience in the southern Dust Bowl area. It will be noted in the above graph that not only was precipitation at Dodge City 14 percent above normal for the 1920 decade but it was very uniform in comparison with previous decades. This favorable rainfall along with dollar wheat and the introduction of the tractor and combine provided a potent stimulus to expansion of farming onto lands not normally suitable for crop production. It was the concurrent happening of this triumvirate of favorable forces in the 1920's, any one of which would have caused notable expansion of cultivated land in this area that set the stage for the aggravated situation in the present drought. This, I believe, is the why of the Dust Bowl.

War-time prices of $2.00 and $3.00 per bushel caused some expansion of cultivated land in both humid and subhumid areas but the holding up of wheat prices to the dollar level throughout the 1929's was a major cause of plowing up of additional hundreds of thousands of acres of pasture lands. Likewise, the introduction of new power machinery, particularly the tractor and combine, would have of itself resulted in a movement of the wheat belt westward because these machines provided a more economical means of production best adapted to the large, level fields of the Great Plains. For this reason a considerable part of the expansion in the last two decades is permanent. With proper soil and moisture conserving practices, the western Great Plains is our most economical, lowest cost of production, area for wheat, grain sorghums and cotton production. With modern equipment, three hours or less of man labor are required to produce an acre of wheat and five hours of man labor will produce an acre of cotton aside from picking on the large, level fields of the West. These labor requirements are only one-tenth of those commonly found under humid conditions where large power equipment is not used extensively. Because most of this land has such a low carrying capacity as pasture, one head to 20 acres or more, relatively small yields of cash crops are oftentimes the most profitable alternative use of the land for the individual farmer.

TABLE 3. SUPPLEMENTAL DATA FROM SELECTED WEATHER STATIONS IN THE
SOUTHERN DUST BOWL AREA, 1910–36

	Average* Prior to 1931	Average Annual Precipitation			Per cent of Average Annual Precipitation Prior to 1931 by Decades		
		1910–19	1920–29	1930–36	1910–19	1920–29	1930–36
12 weather stations in south-western Kansas	*Inches*	*Inches*	*Inches*	*Inches*	*Percent*	*Percent*	*Percent*
Average[1]	18.18	17.08	19.35	15.24	94	106	84
Tucumcari, New Mexico Average	17.10	17.34	17.28	13.74	101	101	80
Beaver, Oklahoma Average	19.98	19.69	20.75	15.43	99	104	77
Amarillo, Texas Average	21.59	18.85	24.10	16.83	87	112	78
Lamar, Colorado Average	15.75	15.67	16.51	11.51	100	105	73

* Based upon records of a varying number of years at the several stations, all antedating 1910.
[1] These 12 weather stations in southwestern Kansas are located at: Colby, Dodge City, Garden City, Goodland, Kismet, Lakin, Leoti, Liberal, Plains, Syracuse, Tribune, and Ulysses.

The data in the above table shows annual precipitation at se-
lected weather stations in the southern Dust Bowl area; in gen-
eral it shows the same characteristics as the graph of the Dodge
City data. The decade 1910 to 1919 shows precipitation at most
stations was slightly below normal. That for the 1920's was dis-
tinctly above normal at most stations and thus far in the 1930's
precipitation has averaged from 15 percent to 25 percent below
normal. Of course, there are many factors besides average annual
precipitation affecting crop and livestock production and there-
fore, farm income in this area. Seasonal distribution of precipita-
tion, rate of fall per hour, condition and contour of the land, hail
damage, wind damage, winter-killing of wheat, insects, disease,
and of course the prices of farm products might be enumerated.

The National Park Service explains the abandonment of the
Cliff Dwellings in Mesa Verde National Park in southwest Colo-
rado as being due to a 23-year drought lasting from 1276 to 1299
A.D. The period and extent of this drought are shown in tree ring
growth and can be taken as fairly accurate as to date and extent.
Authorities are convinced that the abandoning of the Cliff Dwell-
ings was due to this prolonged drought rather than disease or
enemies. The Cliff Dwellers were farmers rather than hunters,
living for the most part on corn, beans, and squash. Pictures of
ancient weather records as portrayed in tree ring growth afford
an interesting and worthwhile study of long-time weather rec-
ords. These studies indicate that the kind of vegetation supported
and the rate of plant growth and therefore climate were approx-
imately the same in this area a thousand years ago as now.

A study of all of these various weather records indicates that
both the optimism in this area in the 1920's and the despair of

the 1930's to date should be tempered. That is my purpose and hope in presenting these data. Relief expenditures have been large in many counties of this area, running in excess of $200.00 per capita. The Federal Land Banks have made a large number of loans in this area, holding mortgages on 25 to 50 percent of the land in many counties, double or more the average of the country as a whole. However, most of these loans have been made on relatively conservative basis. Emergency loans and drought feed and seed loans have been large in this area and to date repayments have been small. A large number of agencies, both federal and private have a large stake in this western country. The fortunes and happiness of several million people are dependent upon the rehabilitation and future income of this area. Past experience witnesses the rapid recovery that is possible in this area with the return of more nearly normal weather conditions. To date we have had no indication of a permanent change in climate. Our most logical expectation is a repetition of past history which would indicate a more plentiful rainfall than that received in the past five years. On the other hand there is no indication that the end of the present drought can be accurately forecasted.

Much progress has been made in recent years in the adoption of cultural practices and in the adaptation of crops suitable to this area. Most of the settlers of this area came from more humid areas and brought their knowledge of farming practices and predilections as to farm types with them. Naturally also, there must evolve a different type of farming when the humus content of the soil resulting from the countless ages of the growth of grass becomes depleted through intensive cropping. The bumper crops that were the result of abnormally favorable rainfall and newly broken sod perhaps cannot be repeated but profitable yields can be maintained over much of this area with proper farming methods. The dryer areas and the poorer soils broken out under the stimulus of high farm prices coupled with abnormally favorable rainfall must be returned to a less intensive use as pasture.

Farming on the contour has been found to result in an increase in the penetration of rainfall quite commonly in this area from 25 to 50 percent. This is equivalent as far as moisture for crop production is concerned to moving a farm 100 or 200 miles eastward into the more humid farming areas and often spells the difference between success and failure. In extreme instances it has been found that the penetration of moisture and therefore, the effective moisture available from a given rain was double on land

listed or furrowed on the contour to that stored in adjacent fields farmed up and down the slope. Most of the land suitable for cultivation in this area does not require expensive terraces for soil and moisture conservation; inexpensive contour farming and strip cropping being sufficient and more practical.

Likewise, progress is being made in the development of varieties of crops particularly suited to the conditions and requirements of the Great Plains area. Among these might be mentioned the so-called "combine" milo, a grain sorghum with a short, erect habit of growth adapted to harvesting with a combine. Fall-sown forage sorghum has proven an effective winter cover-crop at the Woodward Field Experiment Station at Woodward Oklahoma, in preventing wind damage, and soil blowing. These are only a few of the things that have been learned and are now being practiced in a limited manner that must come into general use in the solving of the Dust Bowl problem.

President Roosevelt states in his letter of transmittal to Congress of "The Future of the Great Plains," a recent report of the Great Plains Committee,

... the problem of the Great Plains is not merely one of relief of a courageous and energetic people who have been stricken by several years of drought during a period of economic depression. It is much more fundamental than that. Depression and drought have only accentuated a situation which has been long developing. The problem is one of arresting the decline of an agricultural economy not adapted to the climatic conditions because of lack of information and understanding at the time of settlement and of readjusting that economy in the light of later experience and of scientific information now available.

The settlers of the Plains brought with them agricultural practices developed in the more humid regions from which they came. By historic circumstance the period of settlement was generally one of rainfall above the average, and, although water was known to be scarce, these practices then appeared to be suitable. The long-run experience, however, has disclosed that the rainfall of the area hovers around, and, for considerable periods, fall below the critical point at which it is possible to grow crops by the agricultural methods common to humid regions. A new economy must be developed which is based on the conservation and effective utilization of all the water available, especially that which falls as rain and snow; an economy which represents generally a more rational adjustment of the organization of agriculture and cropping plans and methods to natural conditions.[3]

[3] "The Future of the Great Plains," Message from the President of the United States transmitting The Report of the Great Plains Committee under the Title "The Future of the Great Plains." House of Representatives, Document No. 144, 75th Congress, 1st Session.

FORESTS IN A LAND-USE PROGRAM[1]

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In a recent Associated Press Dispatch[2] I. W. Duggan, Assistant Southern Director of the Agricultural Adjustment Administration, is reported to have said that land in the cotton-growing area of the United States was only 74 percent as productive as the nation's average soil, and that, although 34 percent of the nation's farm population lived in the area, they received only 21 percent of the national farm income. In this statement, attention is fixed on the three primary elements in our knotty rural socio-economic problem: people, income, and land. Mr. Duggan implies that too many people in the South are producing too small an income because they are trying to raise on a large aggregate area of poor land a crop for which no adequate market exists. I know that some competent agricultural economists feel that, under efficient practices, half the farm people in the South, working half the present area of tilled land, could meet all our domestic and export needs for the products of southern agriculture and thereby double their present individual family income. Be that as it may, we now have *all* the people, and they are on *all* the tilled land. Our problem, therefore, is to give them the maximum purchasing power and the best possible living conditions while fundamental changes are being made. To do this we can, it seems to me, strive toward two specific objectives: (1) to make the land produce *continuously* the maximum net cash income consistent with the long-time public interest, and (2) through such production to supply the maximum opportunity for employment.

The agricultural possibilities of land-use under present practices are well known both with respect to cash income for the owner and with respect to opportunities for employment of labor. Less well known are the possibilities for employment and continuous cash income from southern lands when devoted to the cultivation of timber. It is with these latter possibilities that I wish to deal in the following pages. Although forest land offers opportunities for income from hunting, trapping, recreation, and other rights, I shall confine myself to income from immediate products of forest trees.

These data are, in part, those gathered by the Southern Forest

Survey of the United States Forest Service, an activity of the Southern Forest Experiment Station with headquarters in New Orleans, Louisiana. To obtain a true picture of the supply of timber and other forest products in 1934, our survey crews took to the woods and on foot gridironed the entire South on compass lines 10 miles apart run from the Atlantic Ocean to the plains of Texas. At 660-foot intervals along these lines, field crews established sample plots and classified the land as forested, cultivated,
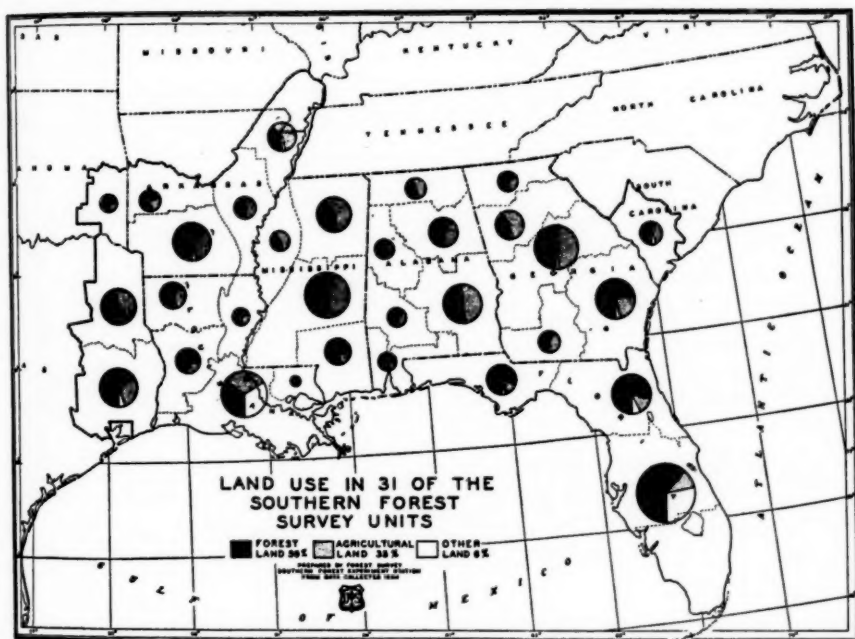
Fig. 1. Land Use In The South

recently cleared for cultivation, recently abandoned from cultivation, marsh, town, right-of-way, etc. On each forest plot trees were counted, classified as to kind, and measured with respect to height and stem diameter; also growth rates were determined by means of an increment borer, and all other data needed to determine stand volume and timber growth were gathered.

Figure 1 presents graphically the results of an analysis of Survey land-use data. On this chart the South has arbitrarily been divided into a number of units, whose boundaries are shown. In each of these units is a circle whose diameter is proportional to the total land area of the unit in which it occurs. The black

portion of each circle represents the forest area in the given unit; the grey portion represents the area in agriculture; and the white represents the land area in other uses.

The predominance of forest land, shown in black on the map, is impressive, particularly along the Atlantic and Gulf Coasts. Of the 31 units shown, only 9 have less than 50 percent of their land area in forest growth and 4 of these lie in the highly agricultural Mississippi Delta region. The large areas of marsh in south Louisiana and south Florida are chiefly responsible for the increased size of the white portions in the circles representing these units.

Considering the South as a whole, the area of forest land is nearly one and two-thirds times the area of agricultural land.

TABLE 1. APPRAISAL VALUE, NET ANNUAL EARNINGS, AND INCOME AS A PERCENTAGE OF INVESTMENT FOR SECOND-GROWTH TIMBERLAND

	Small farm ownership		Large commercial ownership	
	Loblolly pine type	Southern bottomland hdwd. type	Shortleaf loblolly pine type	Naval stores pine type
Land value (i.e. without timber)	$3.00	$ 3.00	$ 3.00	$ 3.00
Value land and timber	8.00	10.00	16.00	11.00
Gross annual returns per acre	.90[1]	.49[3]	1.19[5]	1.29[7]
Operating cost	.16[2]	.16[4]	.30[6]	.35[8]
Net annual returns per acre	.74	.33	.89	.94
Net annual income	9.2%	3.3%	5.6%	8.5%

[1] Based on a continuous annual growth of 257 board feet (International ¼-inch log rule) at $2.82 per thousand board feet and 0.36 cord (4 feet x 4 feet x 8 feet) at 50¢ per cord.
[2] Based on 15¢ per acre taxes and 1¢ per acre for fire suppression.
[3] Based on a continuous annual growth of 175 board feet (International ¼-inch log rule) at $2.10 per thousand board feet and 0.5 cord (4 feet x 4 feet x 8 feet) at 25¢ per cord.
[4] Based on 15¢ per acre taxes and 1¢ for fire suppression.
[5] Based on a continuous annual growth of 174 board feet (International ¼-inch log rule) at $5.85 per thousand board feet and 0.34 cord (4 feet x 4 feet x 8 feet) at 50¢ per cord.
[6] Based on 15¢ per acre taxes, 5¢ per acre fire protection and 10¢ per acre administration cost.
[7] Based on an integrated continuous use of timber for naval stores, lumber, poles, piles, and pulpwood
[8] Based on 20¢ per acre taxes and 15¢ for fire protection and administration.

Furthermore, analysis of our data shows that land is being abandoned for cultivation nearly three times as fast as new land is being cleared for agriculture. Thus, as long as present trends continue, the area of forest land can be expected to increase in the South.

What can this forest land contribubte in the way of cash income to land owners and employment to labor? An answer to the first part of this question is given in Table 1, where income data on four distinct kinds of forest ownership are presented. These forest incomes are based on a timber cut that does not exceed the growth and represent, I believe, the average that is being obtained in similar sawtimber-size stands on millions of acres throughout the South without fire protection, cultural operations or the application of other forest management practices. These

incomes represent, in effect, what the woods can do for themselves without the aid of man and sometimes in spite of him. Needless to say, these incomes can be greatly increased by building up the growing stock through a reduction in the mortality loss and through an acceleration in the growth as a result of improved selection of trees to be cut, and by improving the timber-marketing practices.

The small-farm ownerships characterized by the data appearing in column 1 represent the average of some 660,000 acres of second-growth sawtimber in the loblolly pine type in eastern Texas. The small-farm owner usually has 40 or more acres of woodland adjacent to his farm land. Oftentimes he does not recognize the value of his timber, and in times of financial difficulty markets his forest products to poor advantage. As a result, he realizes less per thousand board feet of timber sold than his timber is actually worth. In this example, the value of standing timber and annual timber growth are based on a price of only $2.82 per thousand board feet of lumber; in many parts of the South, timber of comparable size and quality is being bought for this price. This farmer's administrative expense can be considered as nil and his fire-protection cost practically so. On this basis, and by cutting only the growth, he realizes $.74 per acre net or more than 9 percent on the land and timber value.

The incomes and values for the small-farm owner in the southern bottomland hardwood type, where growth is somewhat less than in the pine type of eastern Texas, are representative of second-growth sawtimber-size river-bottom hardwood stands anywhere in the South except in the Mississippi River Delta, where land values and taxes are generally higher than shown here. This kind of owner also frequently underrates the value of his timber and during times of stress or in emergency sells it for less than its real value. Accordingly he earns $.33 net per acre or 3.3 percent on his total investment in land and timber.

The incomes and values for the large commercial ownership in the loblolly-shortleaf pine region are based on some 300,000 acres of second-growth sawtimber-size pine in Arkansas. In this case the owner is assumed to know the actual market value of his timber and to be in a position to market it most effectively. His net annual income per acre is $.89 or approximately 5.6 percent of the value of his land and timber.

The large commercial ownership of naval-stores pine type in Florida shows a net annual return of $.94 or 8.5 percent on the combined value of land and timber. This is typical of many thou-

sands of acres of second-growth longleaf and slash pine timber, worked for the gum from which turpentine and rosin are derived. This income is based on the full use of the trees for naval stores before selling the completely worked timber for such uses as poles, piles, lumber, and pulpwood.

May I emphasize again that these are yields from second-growth sawtimber-size stands as they now exist. At present these stands are under-stocked particularly in the larger size classes; in general they are not protected from fire, nor are they being cut in such a way as to insure maximum timber growth. If they were fully stocked and were properly cut, and if the products were effectually marketed, net money yields per acre could reasonably be expected to double or treble assuming present market conditions. On the average, as a result of improvement in management, hardwood stands can be expected to show a relatively greater increase in money yield than pine.

And now, what opportunities does forest land offer for employment? According to Survey studies of forest employment in the South, approximately three-fifths of a man day of labor can be provided each year through the cutting and manufacturing of the growth on an average acre of second-growth forest land such as we have been discussing. This employment includes work in the woods, cutting timber for any kind of industrial use; it also includes the labor involved in all transportation of commercial logs, bolts, billets, and cordwood, except that on common-carrier railroads and barge lines. Furthermore, it includes the employment provided by mill- and office-work in such primary forest industrial plants as sawmills, pulp and paper mills, veneer and stave plants, creosoting plants, and destructive distillation plants.

What, in brief, does the forest mean to an area such as a state or portion of a state? In southeastern Texas, for example, are some 4,900,000 acres of pine timberland. Some of it is now growing sufficient timber to produce a net annual ncome of $.74 per acre and we can safely say that if restocked and protected from fire, *all* of it could produce equally well. In this region, approximately 1,170,000 acres of hardwood land is, or can be, producing $.33 per acre. This pine and hardwood forest area is, therefore, capable of producing approximately $4,000,000 net income per year. Three-fifths of a man-day of labor in forest industries per acre of forest land per year is equivalent to more than 3½ million man-days of labor per year. At $1.25 per man-day, this represents about 4½ million dollars. Under present economic conditions and

with but slightly improved forest management practices, somewhat over 6,000,000 acres of forest land could bring in more than 8½ million dollars annually through the sale or use of trees on the stump and through the labor involved in the harvesting and primary manufacture of products therefrom.

And now, to relate all of this to people, income and land, the three primary elements of our problem as outlined by Mr. Duggan. Apparently he has been thinking in terms of salvation for the rural South through a crop-controlled and otherwise rejuvenated agriculture. Unquestionably, agriculture now is, and probably always will be, the mainstay of the rural population of the South. Nevertheless, southern farmers, by caring for their forests, by properly harvesting their own woodland products, and by part-time employment on commercial forest land can materially increase their yearly cash income. Approximately 59 percent of the land area in the South supports a forest growth nearly all of which is capable of producing a net annual income of as much as $.75 or $1.00 per acre, and about 35 percent of this forest area is in farm woodland. That the southern farmer is already very much in the timber business is further indicated by the fact that more than 40 percent of the total farm area in the south is growing a timber crop.

The people of the rural South have in their extensive forests a resource that grows and that furnishes income both through the sale of products and through the labor involved in their marketing and manufacture. Properly handled these forests can and will play their full share in the solution of our perplexing rural problem involving people, income, and land.

FARM MORTGAGE LOAN REPAYMENT

A SURVEY OF EXISTING PLANS AND SOME POSSIBLE ALTERNATIVES[1]

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Introduction

It is now twenty years since the Federal Farm Loan Act provided for a system of farm mortgage financing which included, as an integral part, a plan for amortization repayment of loans. At that time many observers would have selected the amortization feature as the most important single contribution to improved mortgage practice. Some saw in the amortization plan the farmer's road to a debt-free Utopia. In the two decades since 1916 the amount of mortgage debt held by Federal agencies under the amortization plan has increased to almost three billions of dollars.[2] Yet there are doubtless few who now believe that the amortization plan is a solution to the farm debt problem. In fact, in the extreme stress of 1933 it was necessary, or in any case it was deemed wise, to abandon temporarily the amortization feature of mortgages written by the land bank system.

The time has come to review the question of mortgage repayment policy. If the amortization plan has not justified the hopes of its sponsors when applied to American agricultural conditions and practice, is it an improvement on the nonamortized short-term mortgage which it replaced? More important still is it possible that some repayment scheme has been or can be devised which will be better than either of these plans? Especially pertinent, for example, is the question of whether a workable repayment plan may be designed which will call, not for fixed annual payments but for payments adjusted on the basis of the current level of farm income. It is our first task in this paper to assess (summarily) the merits and shortcomings of the older repayment schemes and to raise the more important but neglected question of just what is desirable in repayment policy. The second task is to suggest and appraise tentatively some repayment schemes

which depart more or less radically from any now in general use.

The several possible ways of handling the repayment problem which we propose to discuss may be outlined in summary fashion as follows:

1) Loans in perpetuity—no repayment;
2) Short-term loans payable at maturity;
3) Long-term amortized loans;
   a) With fixed annual payments of interest and principal;
   b) With payments of interest and principal subject to voluntary adjustment. By voluntary adjustment is meant provision for the building up of reserves by the mortgagee. Any subsequent failures to meet payments would be debited against these reserves.
   c) With payments of principal or of interest and principal subject to compulsory adjustment on the basis of ability to pay.

The Loan in Perpetuity

It is the deeply-rooted conviction of almost everyone that a mortgage should be paid off. It is supposed that in so doing the debtor completes a contract; improves his standing in the community; and presumably adds to his self-respect. The holder of the mortgage is supposed to look upon repayment as the completion of the transaction and the vindication of his judgment in making the loan. All in all repayment is considered to mark the termination of a burdensome piece of business. Yet withall it is difficult to find economic criteria which justify this acclaim. When the mortgage is secured by improvements which depreciate at a more rapid rate than the mortgage is paid off, the farmer's capital position is impaired; the argument for repayment here would appear to be substantial. But in the case of land there may be no depreciation. If it is a legitimate practice for a farmer to borrow in order to obtain ownership, then it would appear to be legitimate for him to continue in ownership indefinitely by the same means. Repayment means that he is saving and increasing his net worth. To prove that he should pay off the mortgage it is necessary to prove (a) that he should save the amount which he pays on the mortgage rather than spend it on his living and (b) that he should invest these savings in his own land. The first of these propositions (that he should save any given amount) is obviously impossible of a strictly economic demonstration. The second proposition (that he should invest in his own land) may be more readily susceptible to proof. However, from the point of view of the liquidity of his estate in old age or death there are advantages in having savings invested in other places than in land—annuities or insurance are possible examples. Further there would be some small economy

and convenience in passing the same mortgage along from one generation of landowners to the next.

The notion that a moral obligation has been met when a mortgage is repaid has its roots, no doubt, in medieval attitudes toward debts. It has been fortified by loose analogy to what is considered sound practice in corporation finance. There lip service, at least, has long been paid the convention that a loan should not have a maturity more remote than the life of the capital good which it buys. Since most capital goods eventually wear out this has led to the view that all loans should have a definite maturity. This assumption has been uncritically applied to the farm mortgage despite the indefinite durability of much if not most land.[3]

Mortgage loans in perpetuity, assuming no voluntary repayment, would increase the total mortgage debt; it is a fair supposition that they would increase it even if borrowers were encouraged to liquidate their loans as they were able to do so. However, the increase would not proceed indefinitely. Eventually a new equilibrium would be reached (other things remaining equal) where no new mortgages would be written because none would be needed. The supply would at that point be sufficient to finance the succession of land—which, it is well to note, is the major function of the mortgage. However, it is perhaps unnecessary to observe that in a world of violent fluctuations in prices and incomes the higher the level of mortgage debt in relation to land values the greater the likelihood of default and consequent difficulties during certain periods. Repayment of mortgage indebtedness during periods of favorable farm income increases the security of the farmer's tenure in less favorable times.

The question of the perpetual mortgage is by no means an academic one. At present (early 1937) the amortization feature of the loans of the Land Banks is in abeyance. If Congress does not see fit to restore it on or before July 11, 1938 (which is at least a reasonable possibility) the F.C.A. will be committed to something at least approaching the perpetual mortgage. It might prove a less serious matter than would appear at first glance.

Unamortized Short-Term Loans

In 1928 some 76 per cent of all mortgage loans outstanding had maturities of five years or less; excepting the Federal and Joint Stock Land banks, virtually no loans were made with a maturity of more than 10 years.[4] Although the refinancing program of the

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[3] Since buildings, and also some land, are not durable the notion of a loan maturity equal to the life of the instrument purchased has of course some validity in the case of agriculture.

[4] David L. Wickens, *Farm-Mortgage Credit.* Bureau of Agricultural Economics. U. S. Department of Agriculture. Technical Bulletin 288, 1932, p. 77.

FCA has greatly increased the use of the longer term mortgage, the short-term contract without amortization remains of front rank importance.

The criticisms which have been leveled at this type of mortgage contract are numerous. The term is much shorter than the time normally required to repay the mortgage. This necessitates the periodic expense and possible difficulty of renewal. The holder of the mortgage is likely to be uninterested in repayment in good times (he may actually discourage it) while he may be embarrassingly anxious that the principal be reduced or repaid when renewal comes during a depression. Most of these difficulties, it may be said, are related more closely to the behavior of the lender or lending agency than to the term of the mortgage. A federal agency, concerned with agricultural welfare, would not press for repayment during a depression nor would it be likely to discourage repayment during good times. The cost of frequent renewals would, of course, continue; but the present uncertainty surrounding renewal during a depression would be removed.

It has been argued that the short-term mortgage loan (in contrast to the amortized loan) encourages repayment. In anticipation of each renewal the borrower puts forward what effort he can to reduce the principal. In contrast, with an amortized mortgage, he is assumed to content himself with such payments on principal as are called for by the contract. In prosperous years these contractual payments may be less than the amount he could easily afford. No careful studies of the comparative repayment record on amortized and nonamortized loans have come to our attention.

The short term mortgage has a further possible advantage in keeping the rate of interest carried by the mortgage debt in some degree of conformity with the general market rate. Before Congress assumed control of the mortgage rate in 1933 this was doubtless a matter of some importance. The Federal Land Banks, with the privilege of calling their bonds in 10 years after date of issue, could reduce their interest charges by calling bonds and replacing them with a new issue bearing a lower rate of interest if the opportunity presented itself. The farmer, however, continued to pay a mortgage rate at one percent over the rate on the original bond issue. A difference could arise in the rates which different farmers were paying the land banks. The farmer who had his mortgage written when interest rates were high must reflect on his ill-fortune for 30 odd years. The land bank, in the meantime, might have called the bonds which financed the mortgage and have substituted a lower-rate issue. Since the bank did

not need to call an issue if it was not advantageous to do so until the mortgage had (approximately) expired, it was in the happy position where it could not lose.[5]

In the light of customary objectives in mortgage (and particularly repayment) policy it may be that the short-term mortgage has more advantages than it is usually credited with. It seems unlikely, however, that the Farm Credit Administration will ever return to this type of contract except, perhaps, for Commissioner's loans. The Land Banks are stoutly pledged, in principle, to long-term loans and to the amortization plan. Further, it would appear that most of the advantages of the short-term loan could be realized by modifications of the amortization plan; in the same way the disadvantages of this type of loan would be avoided.

The Long-Term Amortized Loan

The long-term amortized loan has a certain dramatic quality. A small addition (in most cases one percent of the original principal) is made to the yearly interest rate. The additional annual payment—like a sales tax or a pension levy—is extracted quietly, almost surreptitiously. Yet the miracle worked by this one percent is that when the mortgage has matured the mortgage has also disappeared. The farmer, if he be still alive, is free of debt. It is no wonder that many have waxed enthusiastic over this invention which has made the age-old task of "lifting" the mortgage a mere matter of toying with a well oiled block and tackle.[6]

Whatever may be said in support of the amortization plan— and it is beyond doubt that much can be said—it is based on one assumption that is undeniably erroneous. That assumption is that the farmer throughout the life of the loan will always have a certain minimum and mathematically predetermined ability to make repayments. But repayment of the mortgage, as we have noted, is an act of saving. This saving comes normally from the residual earnings after production and living expenses are met, and this residual is known to fluctuate widely. In years when the residual is large, large savings and repayments would be expected; when it is small or non-existent it is hard, indeed, to justify saving and repayment.

It has been suggested, in particular, that the amortization plan acts as a brake on repayment during periods of large

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[5] This was especially true of the early issues which were, in the main, 10-30's. Some recent issues have been 10-20's.

[6] The Federal Farm Loan Board in its early days was by no means so commonplace in its choice of metaphor. In 1919 it described the amortization plan in a pamphlet entitled *Killing Off Mortgages*.

farm incomes. The borrower, instead of making a large payment on the principal as would be customary when a short-term unamortized mortgage loan became due during prosperous times, pays only the fixed instalment determined by the amortization table. So far as the situation in depression is concerned, the postponing of all amortization payments in 1933 speaks for itself.

Where the land banks are concerned it might be suggested that, since their interest rates have been lower than those of other agencies, their borrowers could pay the amortization levy and still be as well off as their neighbors with private sources of funds. This is only a partial answer. It obviously has no bearing on the matter of too low repayment in good times. In times of depression the new land bank borrower may be no worse off than his neighbors with their higher interest rate, but the position of the old borrower is different. He derives no relief from the reduction in principal from past amortization. His position may be less favorable than the borrower from private sources who has repaid a like amount.[7]

If fixed charges for repayment are a serious fault of the long-term amortized mortgage, then all of the standard forms of mortgage contract have a yet more serious shortcoming in maintaining fixed levels of charges *as a whole* (interest as well as principal) in the face of widely fluctuating agricultural prices and incomes. This is not a matter of repayment so much as it is a matter of the mortgage itself and the system of tenure which makes the mortgage necessary. However, there is a possible approach through repayment schemes to the problem of over-rigid interest (and amortization) charges. It is to this phase of the repayment problem that we now turn our attention.

"Voluntary" Interest and Amortization Adjustment

For a numer of years the Federal Land Banks have been making a part of their loans on the so-called "Springfield" plan of amortization. Under this plan the borrower pays a fixed instalment on the principal throughout the life of the loan. The interest payments and consequently the total annual or semi-annual instalments grow smaller each year of the life of the loan. With this arrangement it is convenient to permit the borrower to prepay

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[7] Publicly sponsored loaning agencies in New Zealand have granted an interesting concession to borrowers on long-term amortized mortgages. At any time after the borrower has reduced the principal of his loan by one-tenth he is permitted to have the remaining principal reamortized for the same number of years as the original loan. Cf. Belshaw and others, *Agricultural Organization in New Zealand*, New Zealand Institute of Pacific Relations, p. 155.

his principal, and his loan is not declared in default if he foregoes principal payment so long as the total of his prepayments equals or exceeds the amount currently due. He cannot, however, prepay interest.

It is apparent that this arrangement introduces a certain flexibility into the amortization plan. The borrower who prepays principal in good times secures himself against the possibility of default on principal in bad years. It meets in part the fundamental objection to the amortization plan noted above—namely the assumption of unvarying farm income. On the other hand if the borrower is unable to meet amortization payments in bad years it may be that he will be unable to meet his interest payments; this situation is especially probable during the early years of the mortgage when interest payments form a large part of the total instalment. This repayment plan removes some of the rigidity of fixed repayments; it does not alter the fundamental rigidity of the mortgage itself.

It is possible that the prepayment features of the Springfield plan might be extended to apply to both interest and principal. Assuming that the contract calls for equal annual instalments (interest and principal) as under the standard plan, each borrower might be permitted and encouraged to establish a reserve fund by making advance payments of instalments. If the borrower were allowed interest on his accumulated reserve—to be credited against the amount of his instalments—the effect would be the same as the reduction of his principal. In case of default, instalments would be paid out of the reserve fund. The loan would not be declared in default for nonpayment of instalments until the reserve fund was exhausted or insufficient to meet the instalment due. If at any time the reserve fund of the borrower equaled the unpaid amount of the mortgage then, of course, the mortgage would be declared paid up in full.

The use of the foregoing plan by the Land Banks would involve some accounting and legal problems; it is possible that a change in the statute might be required. However, these matters are not important if the plan is otherwise to be commended. A more important shortcoming is that it might not be used by many of those borrowers who, in times of depression, are the poorest credit risks. The man who has a narrow margin of income over outgo may not have enough in good times to build up reserves. The spendthrift is likely to find other uses for his funds when times are good. Propaganda and pressure from the land banks to en-

courage the building up of reserves might be effective if generously applied. This only experiment could show.[8]

Automatic or Contractual Adjustment

Human nature what it is, the possibility suggests itself of making the payment in the reserve fund in good times contractual or compulsory. This leads to a consideration of repayment schemes designed to increase or decrease the amount of the instalments in accordance with increases or decreases in farm income.[9]

At this stage it is necessary to make a basic decision as to how far we are willing to go in altering the form of the mortgage contract. On the one hand we may choose to keep it as a contractual instrument with the amount of the interest and principal payments *determined for the borrower* as at present. On the other hand we may go so far as to abandon any idea of a contractual interest and principal repayment, either fixed or flexible, and have the lender take a stated proportion or share of the borrower's income each year. This (the so-called "crop share mortgage") makes it necessary to determine the individual borrower's income and it places the amount to be paid partly under his control. It also raises certain problems of individual compliance. The Farm Credit Administration has been experimenting in a tentative way with this form of mortgage.

In the present paper we have restricted our attention to plans of mortgage adjustment which provide for a predetermination of the amount to be paid (or rather the basis upon which payments are to be calculated) and which do not necessitate a check on the individual borrower's income.

A scheme for adjusting the amount of mortgage payments in accordance with the borrower's ability to pay appears to require the solution of at least three problems of major importance as well as a number of less important ones. First, it is necessary to settle upon the unit of area within which movements in income

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[8] Information furnished by the Federal Land Bank of Springfield indicates that prepayments on mortgages under the Springfield plan, as now used, have been relatively unimportant. On the other hand there has been no vigorous effort to encourage such prepayment.

[9] The idea of instalment payments that are adjustable in accordance with income is not new. In 1934 the first-named author participated in the drafting of a section of the report of the National Resources Board which included the following statement: "The Farm Credit Administration is in a position to exercise leadership in credit policy . . . and make adjustments of interest and principal on the basis of indexes of farm prices and actual land values." The report outlines some of the more general aspects of such a plan. (National Resources Board, *Part II, Report of the Land Planning Committee*, p. 271. In the same year Professor W. G. Murray of Iowa State College (*Farm Mortgage Policy*, Iowa Agr. Exp. Sta. Bul. 315, pp. 143, 146, 147) recommended adjustable interest and principal payments as part of a plan which involved the combination of first and second mortgages on heavily indebted property. Mr. S. F. Westbrook (cf. JOURNAL OF FARM ECONOMICS, May 1935) has made similar proposals. Mr. David L. Wickens of the Bureau of Agricultural Economics is a pioneer student of plans for adjustable instalment payments.

are sufficiently uniform so that increases in the required mortgage payment will find all or a sufficient majority of borrowers with increased ability to pay. Second, (and this is closely related to the first problem) the measure or index of income or ability to pay must be settled upon. Third, it is necessary to determine the extent of the increase in the instalment in association with a given increase in farm income; and the extent of the decrease with a given decrease in income. There is no *a priori* justification, as we shall see, for assuming that the increase or decrease in instalment payments should be in simple proportion to movements in income.

The first two questions are in part resolved by a careful consideration of the particular things which adjustments in instalments are expected to accomplish. It will be generally agreed, we believe, that the central problem is the excessive rigidity of instalment payments in the face of comparatively *wide* and comparatively *general* swings in farm prices and incomes. During the 'twenties the dairy farmer, no doubt, met the instalments on his mortgage with considerably more ease than the wheat grower. But this is much less of a problem than the difficulty which producers in all lines experienced in the early 'thirties and which ended in a general breakdown in the mortgage credit structure. Conversely, during the war years, almost all farmers were in a position to make considerably larger payments on their mortgages than in the years preceding or following.

The foregoing would suggest that national averages or indexes of farm income would serve satisfactorily as a basis for adjusting instalments. It must be remembered, however, that in no sense would they be more than a fairly serviceable expedient. When the movement in all prices and incomes is extreme (as from 1930 to 1932) it would be safe to proceed on the assumption that the individual farmer's prices and incomes have moved in the same direction[10] as all incomes. It is at such times that there is most need for ameliorating the harshness of the unadjusted instalment. So long as the movements of the individual income and of all incomes are in the same direction the adjusted instalment is an improvement on the unadjusted—for the individual case it may be adjusted too much or too little, but the "wrong" degree of adjustment is better than no adjustment at all. The real difficulty with adjustment in accordance with a national index is that at times (particularly for small changes) it may move in an opposite

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[10] Thus between 1930 and 1932 the net cash income for living expenses, debts and improvements decreased in all parts of the United States, but the decline in the West North Central and Western regions was much more drastic and that in the North Atlantic area much less drastic than for the country as a whole. (*Crops and Markets,* November 1932, p. 443, and July, 1934, p. 262.)

direction from the movement in incomes of individual groups of producers.[11] The potato grower, whose industry is faced with large production and low prices, will hardly grant that increased instalment payments are justified whatever the increase in farm income as a whole. To some extent this difficulty might be met if changes in instalments were made only for considerable fluctuations in income. The wider the income variation the more likely it is that it applies over wide areas. A positive solution, however, will undoubtedly involve adjustment of instalments on the basis of income estimates for comparatively small and homogeneous areas.[12]

With respect to the problem of measuring income the simplest of several possibilities would be to assume that the level of farm prices is a satisfactory index of income and make adjustments in instalments in accordance therewith.[13] For a short period (i.e. for the first few years after the mortgage was written) price might be fairly satisfactory. But ability to pay is affected by movements in farm costs as well as farm prices. Different relationships between costs and prices at different levels of the latter would lead to unduly high or low instalments. The adjustment of instalments in accordance with prices would have meant that the farmer who took out a mortgage in 1914 would have been paying instalments from 1923 to 1929 that were greater by from 40 to 50 per cent than the original ones. Adjustment in accordance with prices (particularly as special indexes were prepared for more or less homogeneous types-of-farming areas) would also involve serious difficulties when high prices were the result of crop shortage or crop failure.

Adjustment of instalments on the basis of some such net income data as those prepared by the Bureau of Agricultural Economics would meet the objections just raised to the use of prices.[14] The difficulty here is the lack of estimates except for the country as a whole. However, this deficiency is one which can and probably will be corrected.

New mortgage loans are made each year and in greater or less

[11] For example, between 1924 and 1925 the index of net income for the United States increased from 146 to 156 (See Table I). Based on reports from over 15,000 farmers, between 1924 and 1925 the net cash income for living expenses, debts and improvements increased in the East North Central, West North Central, and Western geographic areas, declined in the North Atlantic and South Atlantic areas, and remained practically the same in the South Central area. (*Crops and Markets*, July, 1926, p. 230.)

[12] In regions between well-defined type-of-farming areas there are many farms adjacent to each other with very different types of farming. If, for example, some farmers raised mostly corn and other farmers mostly cotton, a separate income index for each type of farming would be necessary and mortgage loan agreements in such a region would be classified according to type of farming.

[13] Cf. Westbrook (op. cit.) p. 271.

[14] Not entirely, of course, for regional or local crop failure may well occur at a time of increasing income for the country as a whole. Again the solution is a matter of refining the income estimates so that they apply to homogeneous areas.

degree the appraisals and the size of the loan are influenced by current income.[15] To be effective, the adjustment in the instalments in 1933 would have to be greater for a loan made in 1929 than for a loan made in 1931. This difficulty (and, incidentally, certain others associated with appraisal policy) could be met by basing appraisals frankly on current incomes and costs. It would then be possible to take the index of income (according to which the instalments are to be adjusted) and recalculate it so that each year's loans would have their instalments adjusted by an index with a base of 100 for the year in which the loans were made. It is possible, however, that this procedure is needlessly complex. More important, it would involve a considerable change in appraisal policy. A more realistic alternative would be to continue to appraise in terms of the prices of a base period.[16] Instalments could then be adjusted in accordance with variations in an index of income which employed the same base. In any case some such procedure would be necessary for loans now outstanding.

Methods of Adjusting Instalments to Net Income

Plan 1

There are several methods in accordance with which instalments might be adjusted with changes in the index of net farm income. The simplest of these would be to multiply the amount of the regular instalment payment by the index.[17] (Plan 1, Tables I and II and Figures I and II.) This would not serve, however, unless the farmer's cost of living remained constant. An increase in net income tends to be accompanied by an increase in cost of living; a part at least of the farmer's living costs necessarily have priority over instalments on the mortgage. To adjust the instal-

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[15] To the extent that the FCA has succeeded in anchoring its appraisals to a fixed price base (in the main pre-war prices), this point may be contested. It seems likely, however, that the appraiser's judgment is always influenced to some extent by current sale value which again is related to current income and expectation.

[16] Although it is necessary to recognize that the Farm Credit Administration has a large number of loans outstanding whose appraisals have been based on prewar prices, and an adjustable payment plan for such existing loans would have to be adapted to such a policy, the serious difficulty is encountered that for new loans the borrower would in most cases have to pay instalments the *first year* differing from the regular instalment payment for his mortgage. For example, if Plans 2, 3, or 3a below were adopted in 1937, and the index of net income (equal to 100 in the prewar period) were above 100 and high relative to the index of cost of living (also equal to 100 in the prewar base period), the new borrower might resent having to pay an amount substantially more than what the unadjusted instalment payment would be the first year. Also it would be difficult to induce old borrowers to have their mortgage loan agreement changed to an adjustable instalment plan unless the current adjusted instalment payments would be less than the regular unadjusted instalment payments.

[17] Let R_0 be the amount of the regular instalment payment, I_i the index of net farm income and R_i the adjusted instalment payment for year i. The equation for the adjustment is then $R_i = \dfrac{R_0 \times I_i}{100}$. For simplicity *it is assumed in the case of all of the plans that the index stands at 100 in the year in which the loan is written* $(I_0 = 100)$ *and that appraisals reflect the income of that year.*

ments without reference to cost of living would work serious hardship at certain periods. Thus from 1923 to 1929 on a mortgage written in 1914 this plan would have called for instalments from 25 to 50 per cent greater than maladjusted instalments (Figure I). But the farmer's cost of living, which had risen less rapidly than net income during the war, had also fallen less in the
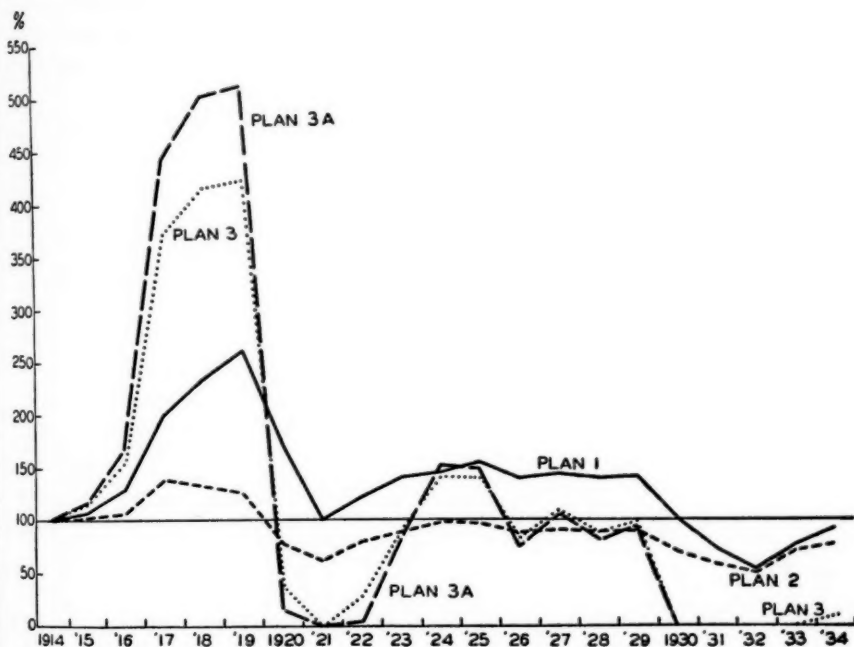
Fig. I. Percentage of Regular Instalment Payments Required Under Plans 1, 2, 3, and 3A on a Mortgage Written in 1914.

postwar years. Repayment would have proceeded at a burdensomely rapid rate during the postwar years.

Plan 2

The obvious correction for Plan 1 is to divide the index of net income by an index of farm cost of living.[18] If cost of living and net income move together and by the same amount (e.g. both rise to 125) then, by Plan 2, the instalment remains unchanged. The

[18] If L_i is the index of cost of living for year i the equation for this corrected form is $R_i = R_0 \times \dfrac{I_i}{L_i}$. It is assumed for Plans 2 and 3 that the index L also stands at 100 ($L_0 = I_0 = 100$) in the year in which the loan is written.

instalment is only increased and decreased as the result of favorable or unfavorable changes in the relation of net income to cost of living.

Plan 2 (Table I and Figure I) would have increased the instalments far less sharply than Plan 1 during the war years (this is
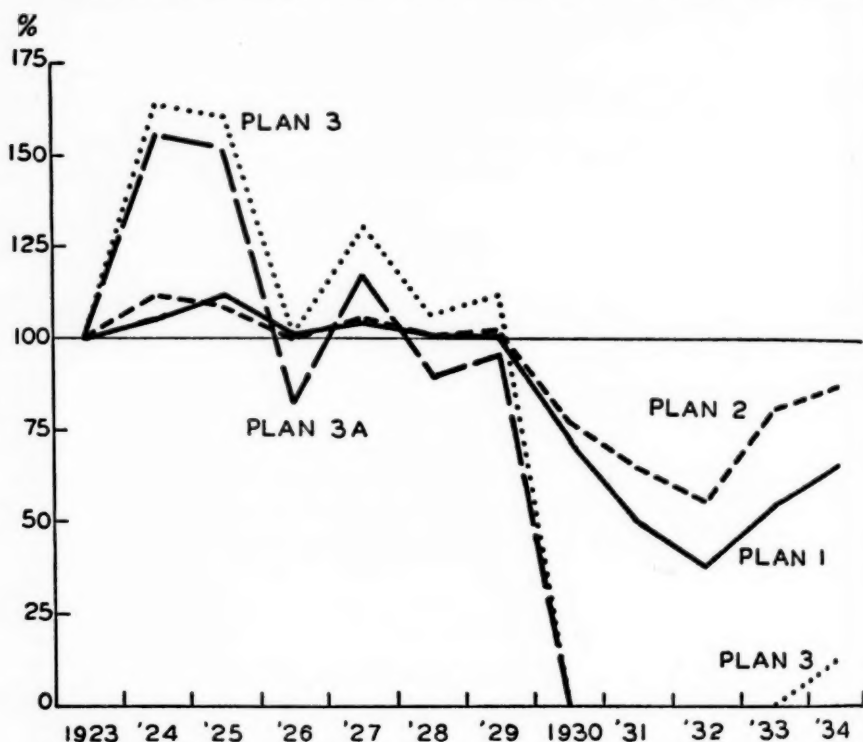
Fig. II. Percentage of Regular Instalment Payments Required Under Plans 1, 2, 3, and 3A on a Mortgage Written in 1923.

an important point) and it would have kept them considerably lower during the postwar years; in fact in 1921 under Plan 2 a mortgage written in 1914 would have paid but 63 per cent of the unadjusted instalments or of the instalment adjusted under Plan 1[19]. From 1921 to 1929 the instalments would have been less than the unadjusted instalments (or instalments adjusted under Plan 1); in 1932 the payment under Plan 2 would have been 50 percent of the unadjusted instalment (but practically equal to the payment under Plan 1). Had the mortgage been written in 1923

[19] See Table I and Figure I. Since no adjustment was required in 1921 under Plan 1, the instalment adjusted under Plan 2 for a mortgage written in 1914 was 63 percent of both the unadjusted instalment payment and the payment adjusted under Plan 1, in 1921.

(with income in that year as the base for adjustment) payments from 1923 to 1929 would have been slightly greater than the unadjusted instalments and in 1932 they would have dropped to about 60 per cent of the unadjusted amount. (Table II and Figure II.)

Plan 3

Mortgage payments are made from residual money—the difference between the net income and what is spent on living. The indexes, I and L, are applied to quantities of money (net income and cost of living, respectively) neither of which varies directly with this difference. Hence, varying R_1 (the adjusted instalment) in proportion to the quotient, $\dfrac{I}{L}$, of these indexes (as was done in Plan 2) does not give a measure of that amount from which the mortgage payment may be taken. Thus, if a farmer made a $700 mortgage payment in his base year, when he had a net income of $3,000 and a $2,000 cost-of-living and if, in a subsequent year, both indexes stood at 50, Plan 2 would call for no change in the amount of payment when actually the farmer has only $500 with which to meet it. True, the value of money has changed as between the two years considered, but for payments on a contractual loan this is irrelevant: a dollar of money income will only extinguish a dollar of the principal of a mortgage loan. To adjust instalment payments so that they fluctuate with the money difference between net income and living costs, an index, D, may be introduced.[20] The new payments are then given by the formula,

$$R_1 = \frac{R_o \times D_1}{100}.$$

Tables I and II, and Figures I and II show Plan 3 as applied to our illustrative cases. It is clear now that the payments under Plan 2 are distorted by the attempt to regulate them in accordance with indexes which are not directly connected with the ability to make mortgage payments. Thus, it underestimates this

[20] If M_o = money income for the year in which the mortgage loan was made, (the base year) and S_o = money cost-of-living for that base year,

then $D_o = \dfrac{M_o - S_o}{M_o - S_o} = 100.$

For any subsequent year, i,

$\begin{cases} D_1 = \dfrac{M_1 - S_1}{M_o - S_o} = \dfrac{M_oI_1 - S_oL_1}{M_o - S_o}, & \text{if } M_oI_1 - S_oL_1 \geqq 0, \quad \text{(that is, when the net income is at least as great as the amount needed for living)} \\ D_1 \equiv 0, & \text{if } M_oI_1 - S_oL_1 < 0. \end{cases}$ (Any savings the farmer has put by when net income exceeded the sum of living costs plus the adjusted instalment are not to be devoted to future mortgage payments.)

In the illustration (Table I) a $10,000 mortgage was placed in 1914 and called for two $388.65 payments in that year. M_o was $4,000, S_o was $3,000, and the difference, $1,000 ($I_o = L_o = D_o = 100$). For Table II, the base year is 1923, and a similar mortgage is placed. Here $M_o = $5,600, $S_o = $4,710, and the difference, $890.

ability to pay when both indexes are approximately equal and above 100 (as in 1924 and 1925), and conversely, when they are below 100. It gives equal weight to each of the indexes, when actually L_1 is significant only for a part of the money with which I_1 is concerned. It would indicate for example a diminished payment in 1927 when the farmer has a larger residual than he had in 1914.

Plan 3 eliminates this tendency for payments to be influenced too greatly, in either direction, by the index of cost of living. In this plan, the basis for variation in instalments, the money ability to pay, is a more logical one than that of either previous plan. Thus, when the farmer finds his living cost equal to, or in excess of, the net return of his farm, no payment is made, instead of the sizable instalment called for by Plans 1 and 2 (as in 1921, and 1930-33).

In examining the operation of this Plan on a mortgage written in 1914 (Table I and Figure I) it will be noticed that the favorable pre-war and war years permitted annual payments of considerable size. Thus, within 10 years after placing the mortgage, the farmer has completely repaid it—and without making any payment which taxed him more heavily than did those of 1914, when the agreement was contracted. Conversely, repayment by this plan on a mortgage placed in 1923 (Table II and Figure II) leaves in 1934 a larger unpaid principal than does either Plan 1 or Plan 2. Again, however, the farmer is at no time burdened by his payments, and, during the recent depression years, he was not called upon to make any contribution toward his debt.

The Question of the Proportional Change in Size of Instalment to the Proportional Change in Income or Ability to Pay

There remains one further consideration. The plans suggested to this time assume that the adjustment in the instalment payments on the mortgage should be directly proportional to changes in the farmer's income (as in Plan 1) or ability to pay (whether defined as in Plan 2 or as in Plan 3). In all, it has been taken for granted that a 20 percent *increase* in income or ability to pay should bring a like percentage increase in the instalment. In 1 and 2, *decreases* in the income or ability to pay were accompanied similarly by the same percentage decrease in the instalment. The more precise definition of "ability to pay" in Plan 3 necessitated a departure from this rule; thus, the instalment vanishes when the difference between net income and living cost becomes zero or negative. The latter decision (that

$D_1 \equiv O$ when $M_1 - S_1 < O$) is an *arbitrary* one, made from objective consideration. Yet it introduces a desirable flexibility denied by a strict rule of proportionality.

In fact, the advisability of the entire scheme of proportional adjustments is a doubtful one. The fact that in 1914 (when the mortgage was placed) the $1,000 residual made a $777.30 annual mortgage payment a reasonable one, need not suggest that thereafter the payment is best when it is 77.73 percent of the annual residual.[21] When this last is very large, the farmer may wish to reduce his loan burden appreciably and thus a much larger proportion becomes reasonable. Similarly, a reduced residual, even though positive, may prompt a smaller than proportional payment—perhaps because of fear of an even less satisfactory year to come.

A plan which adjusts the instalment in different proportions from year to year becomes a very flexible one;—in the extreme case, it ceases to be a plan and becomes a series of payments made in response to the farmer's willingness, in each year, to part with a portion of his residual money. However, there may be introduced an arbitrary rule for payment which would still be a definite contractual agreement and yet allow greater flexibility than that of Plan 3. Such a rule is illustrated in Plan 3A (Tables I, II, and Figures I and II). Here, it is assumed that the farmer reserves (for saving, unexpected or "special" expenditure) some fixed amount in every year, in our hypothetical example say $250.[22] The remainder goes into the two mortgage instalments. The retention of such a sum has precisely the effect of increasing the payments in very good years (as those before 1920) and decreasing them in unfavorable ones (1922-23, 1926-29). This means an even more rapid repayment of the mortgage contracted in 1914, (FigureI), than under Plan 3, while that of 1923 awaits years more favorable toward its reduction.

Final Comments

It is needless to suggest that a highly formal treatment such as the foregoing leaves many practical matters untouched; un-

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[21] In developing Plans 1-3, the writers regard each technicality at least as an improvement on its predecessor. Thus the qualification to be suggested here is illustrated and applied to 3. It might likewise be used on Plans 1 and 2.

[22] $\{R_1 \equiv M_1 - S_1 - 250 \equiv M_0I_1 - S_0L_1 - 250$, if $M_0I_1 - S_0L_1 - 250 \geqq 0.$
$\{R_1 \equiv 0$ if $M_0I_1 - S_0L_1 - 250 < 0.$

Thus it is assumed that when the money difference between income and living costs is less than $250, the entire difference is put aside, and no instalment payment is made. It may well be argued that since the farmer's reserve fund is always given preference over mortgage instalments, some payment to the mortgage holder ought to be made even in adverse years. Plan 3A is merely illustrative; as was indicated above, the procedure has a flexibility which permits many logical adaptations.

In Table I, the payment for 1914 ought to be $375; in Table II, that for 1923 ought to be $320. They were not changed in order to allow a fixed base for comparison in the charts.

doubtedly there are some of these which have not occurred to us at this time. At certain periods the adjusted instalments are less than the amount of the interest required by the contract. In the case of a sharp decline in income this would likely be the case with all of the recently written mortgages. The question arises whether this deficiency in interest should merely be forgiven (at some loss to the lending agency) or whether the amount unpaid should be added to the principal. In periods of favorable income we have assumed that the interest rate would remain as set by the original contract and the total of the excess instalment would be applied to principal. (Tables I and II and Figures I and II are based on the assumption that unpaid interest is added to unpaid principal.) While justice to all borrowers would suggest this course of action and it is consistent with any efforts of the lending agency to make itself independent of public subsidy the alternatives need careful consideration.

Important legal and accounting problems are created by these proposals. To these we have not given attention. It is ordinarily a safe assumption that legal and accounting ingenuity are capable of meeting the demands placed upon them by broader economic objectives. We trust that the assumption is valid in this case.

It has already been suggested that regional indexes will be necessary. It is also necessary that these be prepared (or estimated) promptly at or even before the close of the crop year so that the amount of the mortgage payments may be known. Even then there will be involved some problems of "timing."

A task of education is also suggested. While the central idea of all the plans—payment in accordance with ability to pay—is simple, much would depend on the borrower's understanding of the bases of determining the amount of the instalments. To an agricultural public now schooled in the concept of *parity prices* this should not be difficult. But a little reflection on the political repercussions of an increase in instalment payments which borrowers considered arbitrary, shows the importance of such an understanding.

Finally, and we feel that the importance of this should be stressed, there is need for much more detailed investigation and some experimental testing of these plans for making the mortgage a more flexible instrument for financing agriculture. In the case of the schemes which would encourage the building up of voluntary reserves, this experimental work might be started at once. The FCA is in a position to settle upon certain limited areas where such plans might be given a thorough trial.

TABLE I. MORTGAGE INSTALMENTS ADJUSTED TO FARM INCOME, AND PRINCIPAL REMAINING UNPAID, ON $10,000 MORTGAGE WRITTEN IN 1914

Plan 1   No adjustment   Plan 2   Plan 3   Plan 3A

TABLE I. MORTGAGE INSTALMENTS ADJUSTED TO FARM INCOME, AND PRINCIPAL REMAINING UNPAID, ON $10,000 MORTGAGE WRITTEN IN 1914

Year	I[1]	L[2]	No adjustment[3]		Plan 1		Plan 2		Plan 3		Plan 3A	
			R_0[4]	P_0[5]	R_i[6]	P_i[7]	R_i[6]	P_i[7]	R_i[6]	P_i[7]	R_i[6]	P_i[7]
1914	100	100	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35
			388.65	9,820.04	388.65	9,820.04	388.65	9,820.04	388.65	9,820.04	388.65	9,820.04
1915	107	105	388.65	9,725.99	415.86	9,698.78	396.42	9,718.22	439.18	9,675.46	440.00	9,674.64
			388.65	9,629.12	415.86	9,573.88	396.42	9,613.35	439.18	9,526.54	440.00	9,524.88
1916	130	122	388.65	9,529.34	505.24	9,355.86	415.86	9,485.89	598.52	9,213.82	645.00	9,165.63
			388.65	9,426.57	505.24	9,131.30	415.86	9,354.61	598.52	8,891.71	645.00	8,795.60
1917	200	144	388.65	9,320.72	777.30	8,627.94	540.22	9,095.03	1,430.23	7,728.23	1,715.00	7,344.47
			388.65	9,211.69	777.30	8,109.48	540.22	8,827.66	1,430.23	6,529.85	1,715.00	5,849.80
1918	234	174	388.65	9,099.39	909.44	7,443.32	520.79	8,571.70	1,609.01	5,116.74	1,945.00	4,080.29
			388.65	8,983.72	909.44	6,757.18	520.79	8,308.06	1,609.01	3,661.23	1,945.00	2,257.70
1919	260	206	388.65	8,864.58	1,010.49	5,949.41	489.70	8,067.60	1,640.11	2,130.96	1,985.00	340.43
			388.65	8,741.87	1,010.49	5,117.40	489.70	7,819.93	1,640.11	554.78	1,985.00[8]	
1920	173	218	388.65	8,615.48	672.36	4,598.56	307.03	7,747.50	147.69	423.73	65.00	
			388.65	8,485.29	672.36	4,064.16	307.03	7,672.90	147.69	288.75	65.00	
1921	100	158	388.65	8,351.20	388.65	3,797.43	244.85	7,658.24	—	297.41	—	
			388.65	8,213.09	388.65	3,522.71	244.85	7,643.14	—	306.33	—	
1922	122	153	388.65	8,070.83	474.15	3,154.24	310.92	7,561.51	112.71	202.81	20.00	
			388.65	7,924.30	474.15	2,774.72	310.92	7,477.44	112.71	96.18	20.00	
1923	140	157	388.65	7,773.38	544.11	2,313.85	345.90	7,355.86	345.90[8]		320.00	
			388.65	7,617.93	544.11	1,839.16	345.90	7,230.64	345.90		320.00	
1924	146	147	388.65	7,457.82	567.43	1,326.90	384.76	7,062.80	555.77		590.00	
			388.65	7,292.90	567.43	799.28	384.76	6,889.92	555.77		590.00	
1925	156	161	388.65	7,123.04	606.29	216.97	376.99	6,719.63	548.00		580.00	
			388.65	6,948.08	606.29[8]		376.99	6,544.23	548.00		580.00	
1926	140	159	388.65	6,767.87	544.11		342.01	6,398.55	322.58		290.00	
			388.65	6,582.26	544.11		342.01	6,248.50	322.58		290.00	
1927	144	156	388.65	6,391.08	559.66		357.56	6,078.40	419.74		415.00	
			388.65	6,194.16	559.66		357.56	5,903.19	419.74		415.00	
1928	140	157	388.65	5,991.33	544.11		345.90	5,734.39	345.90		320.00	
			388.65	5,782.42	544.11		345.90	5,560.52	345.90		320.00	
1929	141	155	388.65	5,567.24	548.00		353.67	5,373.67	384.77		370.00	
			388.65	5,345.61	548.00		353.67	5,181.21	384.77		370.00	
1930	102	145	388.65	5,117.33	396.42		272.06	5,064.59	—		—	
			388.65	4,882.20	396.42		272.06	4,944.47	—		—	
1931	72	124	388.65	4,640.02	279.83		225.42	4,867.38	—		—	
			388.65	4,390.57	279.83		225.42	4,787.98	—		—	
1932	53	106	388.65	4,133.64	205.98		194.33	4,737.29	—		—	
			388.65	3,869.00	205.98		194.33	4,685.08	—		—	
1933	76	107	388.65	3,596.42	295.37		275.94	4,549.69	—		—	
			388.65	3,315.66	295.37		275.94	4,410.24	—		—	
1934	92	120	388.65	3,026.48	357.56		299.26	4,243.29	31.09		—	
			388.65	2,728.62	357.56		299.26	4,071.33	31.09		—	

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[1] I = Index of United States net farm income prepared by Dr. John D. Black, Harvard University, from data furnished by the Bureau of Agricultural Economics, adjusted to 1914 base.

[2] L = Index of farmer's cost of living adjusted to 1914 base. "The Agricultural Situation," April 1936, p. 20.

[3] This assumes 6% interest and principal extinguished in 25 years.

[4] R_0 = Unadjusted instalment payment.

[5] P_0 = Unpaid principal if instalment payments are not adjusted.

[6] R_i = Adjusted instalment payment.

[7] P_i = Unpaid principal when instalment payments are adjusted.

[8] Payments would of course not continue after the principal is extinguished. They are continued in the table for purpose of comparison.

TABLE II. MORTGAGE INSTALMENTS ADJUSTED TO FARM INCOME, AND PRINCIPAL REMAINING
UNPAID, ON $10,000 MORTGAGE WRITTEN IN 1923

Year	I^1	L^2	No adjustment[3]		Plan 1		Plan 2		Plan 3		Plan 3A	
			R_s^4	P_s^5	R_i^4	P_i^7	R_i^6	P_i^7	R_i^6	P_i^7	R_i^6	P_i^7
1923	100	100	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35	388.65	9,911.35
			388.65	9,820.04	388.65	9,820.04	388.65	9,820.04	388.65	9,820.04	388.65	9,820.04
1924	105	94	388.65	9,725.99	408.08	9,706.56	435.29	9,679.35	633.50	9,481.14	601.50	9,513.14
			388.65	9,629.12	408.08	9,589.68	435.29	9,534.44	633.50	9,132.07	601.50	9,197.03
1925	112	103	388.65	9,529.34	435.29	9,442.08	423.63	9,396.84	621.84	8,784.19	585.50	8,887.44
			388.65	9,426.57	435.29	9,290.05	423.63	9,255.12	621.84	8,425.88	585.50	8,568.56
1926	101	101	388.65	9,320.72	392.54	9,176.21	388.65	9,144.12	392.54	8,286.12	324.50	8,501.12
			388.65	9,211.69	392.54	9,058.96	388.65	9,029.79	392.54	8,142.16	324.50	8,431.65
1927	104	99	388.65	9,099.39	404.20	8,926.53	408.08	8,892.60	505.25	7,881.17	455.50	8,229.10
			388.65	8,983.72	404.20	8,790.13	408.08	8,751.30	505.25	7,612.36	455.50	8,020.47
1928	101	100	388.65	8,864.58	392.54	8,661.29	392.54	8,621.30	411.97	7,428.76	348.00	7,913.08
			388.65	8,741.87	392.54	8,528.59	392.54	8,487.40	411.97	7,239.65	348.00	7,802.47
1929	101	99	388.65	8,615.48	392.54	8,391.91	396.42	8,345.60	435.29	7,021.55	371.50	7,665.04
			388.65	8,485.29	392.54	8,251.13	396.42	8,199.55	435.29	6,796.91	371.50	7,523.49
1930	73	93	388.65	8,351.20	283.71	8,214.95	303.15	8,142.39	—	7,000.82	—	7,749.19
			388.65	8,213.09	283.71	8,177.69	303.15	8,083.51	—	7,210.84	—	7,981.67
1931	51	79	388.65	8,070.83	198.21	8,224.81	252.62	8,073.40	—	7,427.17	—	8,221.12
			388.65	7,924.30	198.21	8,273.34	252.62	8,062.98	—	7,649.99	—	8,467.75
1932	38	68	388.65	7,773.38	147.69	8,373.85	217.64	8,087.23	—	7,879.49	—	8,721.78
			388.65	7,617.93	147.69	8,477.38	217.64	8,112.21	—	8,115.87	—	8,983.43
1933	55	68	388.65	7,457.82	213.76	8,517.94	314.81	8,040.77	—	8,359.35	—	9,252.93
			388.65	7,292.90	213.76	8,559.72	314.81	7,967.18	—	8,610.13	—	9,530.52
1934	66	76	388.65	7,123.04	256.51	8,560.00	338.13	7,868.07	50.53	8,817.90	—	9,816.44
			388.65	6,948.08	256.51	8,560.29	338.13	7,765.98	50.53	9,031.91	—	10,110.93

[1] I =Index of United States net farm income adjusted to 1923 base.
[2] L =Index of farmer's cost of living adjusted to 1923 base. "The Agricultural Situation," April 1936, p. 20.
[3] Assuming 6% interest with principal extinguished in 25 years.
[4] R_s =Unadjusted instalment payment.
[5] P_s =Unpaid principal if instalment payments are not adjusted.
[6] R_i =Adjusted instalment payment.
[7] P_i =Unpaid principal when instalment payments are adjusted.

The compulsory adjustment plans require further study.[23] It is our hope that this will not be long delayed. The breakdown of the mortgage credit structure in 1931-33 was essentially a product of the clash between fixed requirements of the mortgage contract and the wide fluctuations of dollar levels of farm income. The choice for the future, if similar disorganization in the mortgage credit field is to be avoided, is between a reasonably stable farm income and a reasonably flexible mortgage contract. Without one or the other we may reasonably expect a new period of default, foreclosure, moratoria, and emergency mortgage legislation at some time in the future. The heavy concentration of loans in the hands of FCA may simplify future "emergency" procedure. But any possibilities that there may be in the more workmanlike procedure of improving the mortgage cannot be overlooked.

[23] One important line of investigation for which materials are available would apply the adjustments of the different plans to the budget data for actual farms over a period of years. Farm management surveys and route studies have made the necessary data available for farms in widely scattered areas. The effects of the various plans as applied to such farms would furnish something close to a final conclusion on their workability.

MUTUAL FIRE INSURANCE COMPANIES

Ralph Russell

Trends among farmers' mutual fire insurance companies indicate that there is need for analysis and comparison of their operations for the guidance of officials of the companies themselves and of their farmer members. In some states, at least, it would benefit farmers if a member of the agricultural college staff were prepared to counsel the officers of such cooperative companies in the light of established facts about their businesses. Analytical data such as are described in this article might answer such a purpose. They might also serve as a basis for information available to farmers generally for guidance in insuring their property.

A method of analyzing the businesses of individual farmers' mutual fire insurance companies is outlined below. The period selected is the decade 1921 through 1930. The data used are derived from the annual reports of 16 domestic Maryland mutuals originally organized as county companies insuring chiefly farm property. All of them still have a considerable farmer membership and a few insure farm property almost exclusively. Ten are advance premium companies, while six operate on an assessment basis. Their annual reports on standard forms are on file in the office of the Insurance Commissioner of Maryland. In almost all states, similar data, in more or less detail, covering the domestic mutual fire insurance companies are available in the files and reports of the official in charge of insurance.

Each individual item of expense for each company was summarized for the 10-year period, 1921 through 1930. In some instances, expenditures reported under the wrong heading were transferred to their correct place. Many items originally reported under "miscellaneous" were placed under headings to which they could be properly assigned.

Data for each company were then reduced to a comparable basis by expressing them in terms of cents per one hundred dollars of average net insurance in force. The figures so derived are given in Table 1.

The last item before the total is a reconciliation of all entries relating to realized and book losses on investments, Items 35 and 36 in the report, with Items 33 and 34 of the income statement, covering realized and book gains on investments. Where a net gain for an individual company appeared as a result of this reconciliation, it was included in the income statement, a sum-

TABLE 1. ITEMIZED DISBURSEMENTS OF 16 MUTUAL FIRE INSURANCE COMPANIES OF MARYLAND, 1921–30[1]

Item numbers as reported	Item	Advance Premium Companies										Assessment Companies				Advance Assessment Companies	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
12	Net losses	28.226	25.943	20.328	24.673	21.708	23.405	26.490	14.241	14.712	23.078	17.314	24.182	7.132	18.214	18.685	25.288
14	Adjusting losses	.613	.336	.233	.309	.198	.307	5.266	.082	.084	.012	.118	.463	.051	.112	.021	.194
15–16	Agents' compensation	13.708	5.172	5.932	7.591	4.571	6.237		4.030	.900	1.416	1.478				.294	1.359
17	Field supervision	1.129	.151		.277		.094			.053	.858	.298	.002	.014	.042		
18	Salaries and fees	5.700	6.633	6.547	10.674	6.818	6.530	6.312	3.779	3.683	12.060	2.272	4.275	2.932	1.808	8.456	11.116
19	Rent of company's own building	.381	.675	.502	1.166	.500	1.269	.681	.973	.481	.586	.004	.057	.200	.212		
19a	Rent actually paid	.033	.019	.022	.675	.019	.802				.003	.011			.012		
20	General office expense	.204	.187		.030		.298		.142	.160	.336	.007	.036	.038			
21	Furniture, etc.	.004					.059				.041						
22	Maps, etc.	.565	.693	.651	1.742		.668	.318			.504		2.147	.200	1.022	1.784	.683
	Inspections, etc.																
	Surveys																
23	Taxes, licenses and fees																
	a and c State, county and municipal	.324	.393	.039	.026	.878	.300	.028	.084	.143	1.422	.047	.010	.036	.115	.432	1.699
	b. Insurance department	.245	.029	.089	.113	.059	.120	.118	.145	.210	.207	.027	.068	.171		.510	.573
	d. Federal taxes		.103	.040			.012	.032	.217	.009		.001	.148	.024		.171	
	e. Fire department	.033	.202		.018		.071				.676	.031					
	f. Fire patrol	.026	.001		.012		.019										
	g. Other, except real estate taxes		.003	.180	.120	.084	.273	.249	.065	.000	.243	.020	.320	.058	.002	.030	.107
24	Postage, telephone, express, etc.	.240	.188	.179		.030	.082	.008	.065	.149	.728	.108	.193	.079	.034		
25	Legal expense, not connected with losses	.132	.054	.279	.694	.244	.508	.252	.255	.093	.057	.012	.279	.068	.140	.288	.801
26	Advertising, printing, stationery, etc.	1.148	.398	.397	.230	.139	.194	.916	.001	.256	1.378	.196	.013	.124	.022	.600	1.325
27	Miscellaneous	.763	.132		.078	.381	.210		.322	.062	1.483	.300	.495	.151	.061	1.072	.247
29	Interest on borrowed money	.003	.001			.178						.332	.003				
30	Real estate: expense and taxes	.158	.118			.122		.007	.002		.742	.010				.036	
33	Decrease in liabilities, reinsurance			.014													
34	Agents' balances charged off	.002		.744		.483					.099						
36–37	Net loss on investments										3.139						
	Total	53.636	41.431	36.176	47.418	36.731	41.458	40.677	24.338	20.995	49.158	22.586	32.691	11.368	21.796	32.379	43.392
	Paid into surplus		14.763	9.395	.310	13.324	10.457	.108	4.151	5.996	21.725			1.059	2.565	15.507	8.796
	Grand Total	53.636	56.194	45.571	47.728	50.055	51.915	40.785	28.489	26.991	70.883	22.586	32.691	12.427	24.361	47.886	52.188

[1] In cents per $100 net insurance in force.

mary of which appears further on in this article. Where the result was a net loss, it appears under expenses.

Following the procedure of V. N. Valgren,[1] and R. W. Bartlett,[2] money borrowed and borrowings repaid have been deducted from the income and expense accounts respectively, as they serve merely to inflate the figures and destroy their validity for comparison.

In certain of the assessment types of companies, it is the practice for the insured to pay a fee for inspecting the property and writing the application. Where this item was paid direct to the officer or agent and did not appear on the books of the company, it was necessary to determine the amount so paid and insert it in the proper place under both income and expenses. This item is commonly referred to as a "survey fee," and is usually, and probably improperly, entered under Item 22 "Inspections, surveys, etc." In order that attention might be called to them, the survey fees of assessment companies were entered separately under surveys as shown by Item 22 in Table 1.

On account of irregularities such as the above, comparisons of accumulations of items are more to be relied on than comparisons of individual items. Much more weight should be given comparisons of the total expenses of companies than should be accorded comparisons of any individual items of expense, except, possibly, the figures for losses. Where strictly accounting operations enter in, as in the case of book losses on investments, more latitude for differences of method must be allowed.

The ratios used as criteria of efficiency by writers on costs of farmers' mutual fire insurance companies are found in Table 1 or can be derived from this table. Some of them can be calculated more accurately from the original amount before conversion into terms of cents per one hundred dollars of insurance. Valgren has relied largely on total costs per one hundred dollars insurance for comparisons of costs, using the percentage of losses to total expenses as a concomitant criterion. Thus he writes, "A high expense ratio when accompanied by a low total cost of insurance brought about by careful selection and inspection of risks and the elimination of needless losses, is in reality a mark of efficiency rather than inefficiency on the part of the companies."[3]

[1] Valgren, V. N., Farmers' Mutual Fire Insurance in the United States, Chicago, 1924.
—— Developments and Problems in Farmers' Mutual Fire Insurance, Circular No. 54, United States Department of Agriculture, Washington, D.C., December, 1928.
[2] Bartlett, R. W., The Organization and Development of Cooperative Fire Insurance Companies in New York. Bulletin 435, Cornell University, Agricultural Experiment Station, Ithaca, New York, December, 1924.
[3] Valgren, V. N., Developments and Problems in Farmers' Mutual Fire Insurance, Circular No. 54, United States Department of Agriculture, Washington, D.C. December, 1928, p. 27.

Bartlett uses losses as a percentage of total expenses; and losses, other expenses, and the total of the two, expressed in cents per one thousand dollars of insurance; as criteria for comparing cooperative fire insurance companies.[4]

The data in Table 2 are derived entirely from Table 1. The figures given in the first column of costs in Table 2 indicate in

TABLE 2. THE HIGHEST, LOWEST, AND AVERAGE DISBURSEMENTS OF 16 MUTUAL FIRE INSURANCE COMPANIES OF MARYLAND, 1921–30[1]

Item Num- bers	Item	Amount Disbursed		
		Highest	Average	Lowest
12	Net losses	28.226	20.851	7.132
14	Adjusting losses	.613	.196	.012
15, 16	Agents' compensation	13.708	3.622	.294
17	Field supervision	1.129	.202	.002
18	Salaries and fees	12.060	6.225	1.808
19	Rent of company's own building	1.269	.182	.004
	Rent actually paid	1.166	.259	.057
19a	General office expense	.802	.147	.011
20	Furniture, etc.	.336	.093	.007
21	Maps, etc.	.059	.006	.004
22	Inspections, etc.	.742	.259	.318
	Surveys	2.147	.364	.683
23	Taxes, licenses and fees			
	a and c State, county and municipal	1.699	.366	.010
	b Insurance department	.573	.175	.027
	d Federal taxes	.217	.036	.001
	e Fire departments	.676	.080	.001
	f Fire patrol	.026	.003	.001
	g Other, except real estate taxes	.243	.025	[2]
24	Postage, telephone, express, etc.	.728	.203	.030
25	Legal expense, not connected with losses	.288	.085	.001
26	Advertising, printing, stationery, etc.	1.378	.481	.068
27	Miscellaneous	1.483	.451	.002
29	Interest on borrowed money	.495	.091	.001
30	Real estate expenses and taxes	.742	.112	.003
33	Decrease in liabilities, reinsurance	.099	.007	.007
34	Agents' balances charged off	.014	.001	.002
36, 37	Net loss on investments	3.139	.243	.744

[1] In cents per $100 average net insurance in force.
[2] Less than .0005.

cents per one hundred dollars net risks in force, for the individual items of expense, the amount spent by the company reporting the heaviest expense. The central column of figures gives the simple average for the sixteen companies for each item. The third column of figures in the table gives the smallest amount reported, except that if any companies reported no expense under certain headings the lowest absolute figure was taken. This explains why under item 33 the minimum and average are the same. The fact that the average is less than the minimum for items 34 and 36, 37 is due to the same cause.

For the ten-year period 1921 through 1930, the company paying the greatest amount of fire losses spent on the average 28.226 cents per year in repaying fire losses for each one hundred dollars of property insured. The average expense for losses paid

[4] Bartlett, R. W., op. cit. p. 23-26.

by the sixteen companies was 20.851 cents per year, while the company spending the least under this item paid, on the average, only 7.132 cents a year.

The highest cost for salaries and fees was 12.060 cents per year for each one hundred dollars of insurance, as compared with 1.808 cents for the lowest cost. The unweighted average for all companies was 6.225 cents.

The amount entered under net loss on investments in the column of averages is the total for the companies having net losses on investments, distributed over the sixteen companies. If the average loss and average gain, without weighting by the volume of business, were reconciled, the result would be an average loss per company on investments of .035 cents per year for each one hundred dollars average net risks in force. The amounts of surplus gain or loss were treated in a like manner.

An accumulation of the items of expense into seven categories is given in Table 3. This table is constructed like Table 2 except

TABLE 3. SUMMARY OF THE HIGHEST, LOWEST, AND AVERAGE DISBURSEMENTS FOR 16 MUTUAL FIRE INSURANCE COMPANIES OF MARYLAND, 1921–30

		Percentages of Total Disbursements		
		Highest	Average	Lowest
12 and 14	Losses and adjusting	84.07	62.58	46.97
15-18, and surveys from 22	Agents' and officers' compensation and field expenses	40.67	29.14	13.18
19-21, 24, 26	Office expenses other than salaries	7.74	3.82	1.45
29	Interest	1.52	.35	—
23 a, b, c, d	Taxes and fees	5.24	1.66	.24
36 and 37	Net loss on investments	6.59	.54	—
23e, f, g, 25, 27, 30, 33, 34	Miscellaneous	6.02	1.91	.01

that the data are expressed as percentages of total expenditures. Each item of the first and third columns of figures represents the expenses under the item, expressed as a percentage of the total expenses, for the particular company whose standing was highest or lowest in this particular regard. Moreover blanks appear in the last column if there were companies reporting no expenditure under the various categories.

This analysis differs somewhat from Bartlett's. In dealing with assessment companies only, he used two main divisions of expenditures, losses and other expenses, subdividing the latter into management costs and non-management items. Management costs were salaries and fees, office expenses, application and survey fees, and adjustment costs. Under non-management items were included rent, interest and miscellaneous.[5]

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[5] Op. cit. p. 27-28.

The income of mutual fire insurance companies can also be summarized in a few items, as is indicated in Table 4, which is constructed on the same general plan as Table 3. This table is chiefly valuable to reveal the extent to which the policyholder pays the costs of the company and to what extent these costs are paid from income from investments and gains realized from increases in the value of investments. The cost to the policyholder per one hundred dollars insurance is particularly valuable to farmers as a criterion for deciding where to place their insurance. A company whose expenses are somewhat above average may charge lower fees to its policy holders by reason of funds derived from a large surplus well invested. On the other hand, it may make heavy demands on policyholders in times of depression in order to maintain this surplus in the face of falling securities values. Though sound judgment would dictate drawing on the surplus during hard times and rebuilding it during periods of prosperity, this has not always been done.

TABLE 4. SUMMARY OF THE HIGHEST, LOWEST, AND AVERAGE INCOME FROM VARIOUS SOURCES FOR 16 MUTUAL FIRE INSURANCE COMPANIES OF MARYLAND, 1921–30

		Percentages of Total Income		
		Highest	Average	Lowest
16, 26,[1] 32	Policyholders contributions	100.00	85.98	59.88
22	Interest	39.39	12.21	—
24	Rents	12.89	21.01	—
26[1]	Miscellaneous	.38	1.67	—
30	Increased liabilities, reinsurance	.05	.03	—
33, 34	Net gain on investments	3.20	.38	—

[1] Items under miscellaneous which were received from policyholders were included in the first category.

Data such as that summarized above may be used to make comparisons between companies. Such comparisons may be made on the basis of size of company as measured either by volume of business, by area covered, or by a combination of both factors. Comparisons made in this small sample bear out the results obtained by Valgren and Bartlett, indicating that the lowest costs are achieved by the companies having simpler types of organization doing business over a limited area. When the type of organization and the area covered are such as to enable the membership to exercise the social control possible among farming people, the costs of such companies may be extremely low.

Indications were also found that below a certain minimum size, costs of individual companies were higher than for those of optimum size, as was deduced by Valgren and Bartlett. In addition, there were some variations of costs that seemed to be attributable to the type of people and the type of farming in

which they were engaged. These variations seem to be due to differences in the social control tracing back to different mental characteristics and differing environments.

This type of analysis is strictly financial and can shed but little light on mental attitudes of the parties involved. The question as to how satisfactory are the relations between the company and the insured cannot be easily answered. The quality of personal relations can be better judged by trends in the business of individual companies or by survey data, rather than by averages over a 10-year period. There is undoubtedly some variation among the companies as to the closeness with which claims for losses are scrutinized and as to the readiness with which suspected claims are resisted. It is entirely possible for a company to reduce its costs somewhat by sharp practice in the settlement of losses, but the achievement of this result is likely to be a temporary gain at best. A company which consistently reduces its loss ratio by treating loss claimants unfairly will inevitably lose business. However, the continuous expansion of the businesses of this group of Maryland companies, their high reputation, and their longevity are adequate evidence that such practices have not obtained and that low costs are invariably due to other causes. Survey data collected by the writer bear out this conclusion.

From the point of view of the farmer who is placing his insurance, variations in costs are so extreme that they should induce him to exercise discrimination between companies. It should be pointed out, however, that these average costs and contributions are not rates. For companies that do not classify risks, the rate being the same on all property, the policyholder's contribution is equivalent to the rate except that the former includes the minor item of fees. The amount of fees paid by the individual policyholders does not vary directly with the amount at risk. For companies classifying risks, which is done by 13 of the Maryland companies, the data can serve only as a rough guide to relative rates.

Some companies do a large non-farm business, so that the data reflect the influence of other types of risks. Several companies do business over a wide area and reinsure over a still wider area, so that differing experience in different regions is averaged in the data presented. Most of the companies classify their risks so that, again, the data represent an average of experience resulting from insuring several different types of property.

A company which is expanding its business rapidly with consequent promotional expenses, might show a higher cost of doing

business and might be expected to collect higher premiums from its members to cover these costs than would a company which was not engaged in a definite policy of expansion.

Other data gathered by the writer indicate a wide variation between the rates of various companies on the same type of property. Maryland farmers, however, do not have access to all 16 companies, as some companies do business only in one county and only one or two companies do business throughout the state.

PROFESSIONAL IMPROVEMENT[1]

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Service in the land grant colleges and universities approaches more nearly to a "career public service" than is the case with most of the state and federal agencies. The respect with which these institutions are regarded in the United States has quite generally afforded their personnel a freedom from arbitrary interference and a security of tenure frequently lacking elsewhere. These, however, are negative advantages and if it is expected to retain this prestige and build upon it, more positive action must be taken in the future to attract and hold men of first-rate ability, capable of assuming responsibility, and leadership.

If service in the land grant colleges is to be regarded as a worth-while career, provision must be made for more careful selection of staff members, for their more continuous training and for their promotion to higher grades on the basis of merit. And there must be prizes worth striving for at the top of the ladder. So long as these conditions do not obtain the service will tend to retain too large a proportion of those with mediocre ability, while the really first-rate men are drawn off into industry and business.

In the Federal Government some plans have been initiated or are under consideration, looking toward a regular professional improvement system for staff members meriting such training. The Department of State, for example, has recently allotted a small portion of its annual budget for leaves with pay to secure advanced graduate training. In other departments plans are contemplated for similar leave as well as other types of professional improvement. There are also ventures such as the new graduate school of public administration at Harvard which seeks to bring together men from the government service "in an atmosphere of research and broad inquiry conducive to a better understanding of the long range significance of their public duties." In the federal sphere, therefore, the problem is recognized and is being attacked vigorously. Corresponding action needs seriously to be considered by the land grant colleges.

This paper was written primarily for those interested in the field of agricultural economics. A committee on professional im-

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[1] This paper was read at the Annual Meeting of the New England Research Council at Boston, Massachusetts on November 5, 1936, as a report by the Professional Improvement Committee of the Council.

provement was appointed by the New England Research Council early in 1936 for the purpose of surveying the opportunities available to agricultural economists in the land grant colleges and to formulate suggestions for action only after this situation was known.

Accordingly, a brief professional improvement record or questionnaire, covering six main questions, was prepared and sent to the heads of the agricultural economics departments in each of the 48 states. Replies were received from 47, all except one western state with a very small staff and no distinct department of agricultural economics. These 47 institutions in the aggregate have 557 staff members in the field of agricultural economics and farm management. The six questions asked in the record covered the following points:

1. Number of leaves of absence granted in the last 3 years by type of leave.
2. Conditions under which leave with salary is granted.
3. Numbers of staff members, graduate assistants, fellows, scholars, and others registered for graduate work.
4. Tuition charges and exemptions.
5. Travel allowances for professional meetings.
6. Remarks and suggestions for action.

Leaves of Absence

Leaves of absence were classified first as to salary into leaves with pay (in whole or part) and leaves without pay, and second

TABLE 1. NUMBER OF LEAVES OF ABSENCE GRANTED IN 3-YEAR PERIOD, 1933–36

Year	Leave with salary		Leave without pay	
	Less than half year	Half year or more	Less than half year	Half year or more
1935–36	15	4	9	28
1934–35	2	8	10	32
1933–34	1	8	4	24
Total	18	20	23	84

as to length into those of half a year or more and those of less than half a year. We may for simplicity interpret any leave of a half year or more with salary as equivalent to a sabbatical leave. Table 1 indicates the total number of leaves in each year by types for the 47 institutions.

The replies to the questions concerning leave with salary for a period of a half year or more, as shown in Table 2, indicate that a large majority of the land grant institutions do not grant any such leave whatever. Only 17 of the 47 replying seem to have any

positive policy. Ten others occasionally allow leave but only in individual cases and not on the basis of a definite plan. In 20 institutions leave with pay does not appear to be granted under any conditions.

Even the few which do grant sabbatical leave do so under conditions frequently so rigid that there is no assurance that younger staff members will ever participate. At some institutions, for example, Idaho and Pennsylvania, only full professors are eligible for such leave. The comment on the Idaho record was this: "Must be full professor and (only) two allowed for all of University each year. . . . It amounts to leave after 12 to 18 years of service." At Pennsylvania, however, leave of absence for members of the staff below the rank of full professor may be granted

TABLE 2. CONDITIONS UNDER WHICH SABBATICAL LEAVE IS GRANTED

Leave	States	Number of states	Total leaves granted 1933–36
Not granted	Alabama, Arizona, Arkansas, Florida, Georgia, Louisiana, Maryland, Mississippi, Nevada, New Mexico, North Dakota, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, West Virginia, Wisconsin	20	0
No definite plan	Colorado, Delaware, Idaho, Iowa, Maine, Michigan, Nebraska, North Carolina, Ohio, Vermont	10	3
After 7 years	California, Illinois, Kansas, Kentucky, New Hampshire, New Jersey, New York, Oklahoma, Utah	9	12
After 6 years	Connecticut, Indiana, Massachusetts, Minnesota, Missouri, Montana, Oregon, Pennsylvania	8	5
Total		47	20

for graduate work after two years' service on one-third salary provided the recipient agrees to return to the college at the same salary and serve two years longer or else refunds the money received during his leave. This, like the system of indentured service by which some of our eighteenth century ancestors reached America, is one way of paying your passage, but just a little old fashioned to be found in a free modern state.

At other institutions, leave with pay is granted only after long service (perhaps in cases of impaired health) and as a reward for service rather than on the basis of intellectual merit. At Nebraska, for example, leave is "sometimes granted to those who have been long in service and have a good reason for asking leave." While this is a commendable practice in itself, it is questionable whether it should be disguised under the name of professional improvement.

The record of performance in the three-year period 1933-36 as

shown by the replies is disappointingly small. Only 20 persons in agricultural economics in the 47 institutions were granted leave with pay for a half year or more. Nine of these were in two universities, Cornell and California. Eight of the institutions which stated that they had a definite sabbatical plan granted no leaves to their agricultural economists during the period. When considered against the background of the total number (557) on the agricultural economics staffs of the 47 institutions, this rate of turnover averages slightly more than 1 percent per year. At such a pace it would take nearly a century to allow one leave to each person in the service.

Conditions Attached to Sabbatical Leave

Nearly all institutions granting sabbatical leave allow half pay for a year's leave. Usually full pay for half a year is optional if the individual prefers. At California one may have full pay for a half year or two-thirds pay for a full year's leave.

At Wisconsin, sabbatical leave is not granted, but leave with pay may be obtained by teaching summer school without drawing pay. For this purpose four summer schools are equal to a year's leave with pay. Since summer school pay is approximately one-eighth of the regular academic year's salary this appears to be equivalent to a method of saving one's summer school pay and having it matched by the University. However, since summer sessions are six weeks in length, it may be that service is underpaid at one-eighth of the full year's pay and what happens is that one simply receives full pay for work only by obtaining professional improvement at one's own expense.

A more serious condition frequently connected with sabbatical leave is the question of its equal availability to members of the staff in instruction, research and extension. In 6 (Illinois, Indiana, Kentucky, Minnesota, Missouri, and Oklahoma) of the 17 institutions with a definite plan for sabbatical leave, extension workers are not eligible. Instruction and research personnel are apparently considered on the same plane. This discrimination against extension workers is unfortunate since the nature of extension work in economics particularly is usually such as to lead to a superficial grasp of problems unless one has an opportunity for concentration not possible when actively engaged in routine affairs. Furthermore, it seems probable that a much larger proportion of those in extension work in agricultural economics have been exposed to a minimum of formal economic

training than is the case with the personnel in instruction and research. For this situation, the responsibility can probably be placed on those in charge of the administration of extension work. They have often tended to over-centralize their organizations, holding aloof from the already established teaching and research work in the same institutions. In the selection of new staff members in economics, administrators have furthermore been inclined to overestimate the value of practical experience and to underestimate the need for scientific training.

Leaves Without Pay

Leaves without pay during the past few years have been chiefly for the purpose of working with state and federal agencies. They cannot be regarded as being in the same class with sabbatical or other leave for the primary purpose of graduate training. Nonetheless it may be safely estimated that this kind of leave has broadened the training and experience of the men affected and has in the aggregate resulted in more real professional improvement in this period than the other type of leave. Eighty-four leaves without pay for a half year or more were granted in the three years. This amounted to about 5 percent each year of the personnel employed in agricultural economics.

Term of Service

The term of service imposed on research and extension workers by most institutions has always been excessive as compared with that required of those engaged exclusively in teaching. Usually the instruction staff is on a 9-months basis as compared with 11 months for the research and extension staffs. It has apparently been recognized that teachers need their summers free for further study and training. The same recognition needs to be extended to the other branches of the service, if they are to be really equal in this respect. The situation in recent years has not been improving. As stated by one department head, "For the last few years, staff members of our agricultural colleges have been burdened with so much extra work that they have not only not had the opportunity to get away for a few months to engage in travel, research or study, ... but also many of them have not been able to get the usual annual leave. The matter in my opinion is a serious one and deserves careful consideration. The emergency activities of the last few years have occupied much of our time and have been a test of our endurance."

Graduate Students

The total number of persons registered for graduate courses in agricultural economics in 1935-36 is indicated in Table 3. Altogether there were 397, of whom 79 were staff members. Only 25 fellowships and 5 scholarships were reported, and the fellowships were offered by only 11 states. Relatively little financial assistance is thus available to permit graduate students to pursue full-time study. However, there were 106 graduate assistantships in 25 institutions. These positions called for part-time work running from one-fourth to one-half time. Stipends ranged from $250 to $1,200.

TABLE 3. NUMBERS OF REGISTERED GRADUATE STUDENTS IN THE YEAR 1935-36

Type	Number
Staff members	79
Graduate assistants	106
Fellowship holders	25
Scholarship holders	5
Other graduate students	182
Grand total	397

The wide distribution of graduate students of all types among the institutions is indicated in Table 4. Although there are only nine institutions reporting no graduate students, the remarkable thing is the high concentration in the small group having 21 to 50 students. The five institutions in this group—Illinois, Iowa, Minnesota, New York, and Wisconsin—have almost half of the entire number of graduate students.

TABLE 4. LAND GRANT INSTITUTIONS CLASSIFIED ACCORDING TO NUMBER OF REGISTERED GRADUATE STUDENTS IN THE YEAR 1935-36

Number of graduate students	Institutions	Number of institutions	Total Number of students
0	Arizona, Delaware, Georgia, Nevada, New Hampshire, New Mexico, North Dakota, South Carolina, West Virginia	9	0
1-5	Alabama, Arkansas, Colorado, Florida, Idaho, Kentucky, Maine, Michigan, Mississippi, New Jersey, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, Washington	18	52
6-10	Connecticut, Louisiana, Maryland, Massachusetts, Missouri, Nebraska, North Carolina, Oklahoma, Tennessee	9	71
11-20	California, Indiana, Kansas, Montana, Ohio, Virginia	6	85
21-50	Illinois, Iowa, Minnesota, New York, Wisconsin	5	189
Total		47	397

Tuition for Graduate Students

The question of tuition is frequently a serious obstacle to the cash-conscious graduate student, particularly if he is a non-

resident of the state in which he wishes to take his graduate work. Thirty-three states replied to the question on tuition. The average tuition was $75 for residents and $142 for nonresidents. In 27 of the 33 states replying nonresident tuition was higher, usually about double. In about two-thirds of the states graduate assistants are exempt from tuition, but nearly half of all the graduate students are on their own and therefore possible subjects for this tariff on brains. It is obvious that this is a very effective device for discouraging the much needed interstate trade in graduate students. Nebraska, more progressive in this matter than the other states, has borrowed a suggestion from the motor vehicle laws and has a reciprocal tariff. She charges nonresident students the same rate charged Nebraska students in the state from which the nonresident student comes.

Methods of Obtaining Graduate Assistants and Fellows

Each institution was asked to report on the proportion of graduate assistants and fellows selected from the same institution and from other colleges. The replies ran the whole range from 100 percent local to 100 percent elsewhere. Sixteen states appear to draw mainly on their own graduates as compared with 10 drawing chiefly from outside and 8 about evenly divided.

Those selecting from the outside apparently go to the most trouble to get the best available men. For example, Cornell seems to select chiefly on the basis of scholarship from a long list of applicants. Iowa last year selected six graduate assistants from a list of 55 candidates. Minnesota and Wisconsin indicated that they show preference for men with previous graduate training. Several stated that they corresponded with the heads of other agricultural economics departments. Virginia writes around to the various southern colleges, largely limiting her choice to the South.

Professional Meetings

Institutional policy with respect to travel allowance for attendance at professional meetings is extremely varied, as indicated in Table 5. In 15 states no allowance for out of state travel is permitted, in 14 only occasionally, and in 18 it is usually allowed. Even in these latter it is doubtful if younger staff members receive much consideration. As one reply put it, it would be desirable to use "some systematic plan . . . which will insure all members of the staff—not merely department heads—getting outside contacts."

TABLE 5. NUMBER OF STATES ALLOWING TRAVEL EXPENSE FOR PROFESSIONAL MEETINGS

Travel expense	In the state	Out of state
Allowed	28	18
Occasionally	9	14
Not allowed	10	15
Total	47	47

The proportion of expense allowed varies from transportation cost through one-half to total of all expense incurred. Participation in the program of a professional meeting frequently gets preferred consideration.

Suggested Action

The final question asked on the record was: "What action in your opinion might be taken by the land grant colleges and universities individually or jointly to promote the professional training of staff members and to improve the selection and training of graduate students?"

It will be noted that this question was intentionally meant to cover not only agricultural economists but all of the professional workers of the land grant colleges since it was felt that many of the most pertinent suggestions must necessarily be considered on an institutional basis.

The most significant suggestions made in reply to this question were four in number and were concerned with:

1. A sabbatical leave system.
2. Exchange professorships.
3. Term of service parity for research, extension and instruction staff members.
4. A central clearing house for graduate student applications and offers.

Other suggestions included:

1. Junior memberships in the American Farm Economic Association for graduate students.
2. More encouragement to group meetings of a professional character.
3. Special attention to teaching personnel and the character of the courses taught.
4. Establishment by American Farm Economic Association of a few national fellowships.
5. Development of a few good graduate study centers in the Old South.
6. Attempt to concentrate the graduate work in agricultural economics in a few outstanding centers.
7. Use of Bankhead-Jones or other research funds to establish graduate research assistantships.

As might have been anticipated, more than two-thirds of the replies stressed the need for a really effective system of sabbatical

leave regularly operative and available without discrimination to all three branches of the service.

A system of exchange professorships was suggested by six states—Colorado, Connecticut, Idaho, Montana, Oklahoma, and Virginia. Colorado once operated such a plan and its revival was advocated in a recent report of its Faculty Improvement Committee.

Professor George F. Warren of Cornell expressed the feeling of several with respect to term of service for research and extension workers being placed on the same plane as instructors in these words, "If any given year of the institution were to be the last year, we would probably get more work done if men were employed on the 11-months basis, but during a 5-year period I think that we would on the average get more work done on the 9-months basis, and I am very sure that the quality of the work would improve."

The clearing house plan for graduate students was suggested by one department head as follows: "In the selection of graduate students, I believe there should be some central clearing house in which all institutions wishing to secure graduate students might list their offerings and within which applications of all candidates might be filed and appraised."

Conclusion

It is clear from this review of the situation that opportunities for professional improvement in the land grant institutions are grossly inadequate. Furthermore, those familiar with the profession know that the federal government and private business enterprise have made such heavy drafts on the ranks of the trained and seasoned personnel in the field that the average level of experience, training and effectiveness of agricultural economists in the college service today is definitely lower than it was a few years ago. The situation demands early attention if we do not wish to see a drifting deterioration in the quality of the service and a loss of much of the prestige and leadership hitherto enjoyed by the states. Much can be done by the colleges individually in the way of scrapping antiquated regulations and adopting more liberal institutional attitudes toward professional improvement. Something more can be accomplished through cooperative interstate effort with such devices as exchange professorships and fellowships. And finally the possibility of opportunities such as those offered a few years ago by the Social Science Research Council Fellowships should not be left unexplored.

NOTES

GAINFUL WORKERS IN THE RURAL FARM POPULATION

Many people unconsciously assume that all of the gainful workers living on farms are employed in agriculture and that farms are located in the country. Unfortunately the Census of Agriculture does not classify farm and farm operators into urban and rural. It does show, however, the number of operators who worked for pay or income off the farm, and the number of days worked. A little over 30 percent of all the so-called farm operators worked off the farms both in 1929 and 1934. The National Industrial Conference Board in its recent book "Income in Agriculture, 1929-1935," estimated income to farmers from such work and it materially altered the older figures on income to farmers which included only income from sale or use of agricultural products. Census data are also available on the number of gainful workers in other industries who live on rural farms. These data are found in the 1930 Census of Population, Volume III, reports by states, and so far apparently have been overlooked by persons trying to estimate income to the farm population.

About the only census data available on urban farms apply to the total urban farm population and the number of urban farm families. The opportunities for work off the farm by the farm operator and other members of the farm families are undoubtedly greater for city farms than for rural farms. There may be a small amount of overlapping in the statistics on operators working off the farm and gainful workers in other industries living on rural farms since the Census of Agriculture and the Census of Occupations are not strictly comparable. A person called a farm operator in the Census of Agriculture may be classed as a worker in other industries if he spent most of his time working off the farm.[1]

Chances are that the number of workers in other industries living on urban farms exceeds any possible overlapping in the data and therefore total income earned by gainful workers in other industries living on rural farms must be added to income earned by farm operators from work off the farm in estimating income to people living on farms.

The only data available in the census on gainful workers in other industries living on rural farms apply to the number of individuals in each industry and not to days worked or income earned. However, it may be safely assumed that these workers earn as much as rural nonfarm or urban workers in the same industries. The number of gainful workers living on rural farms while working in other industries is so large that any reasonable income per worker attributed to these workers will show the net income per person living on farms is *much* larger absolutely than the United States Department of Agriculture has led people to believe, and *very much* larger relatively because they have been counting all these people and their dependents as part of the farm population and attributing all the income they earned to people not living on farms, literally doubling the error.

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[1] A rough approximation of any overlapping can be made from data on the number of farms, urban farm families, and farms without dwellings and only unoccupied dwellings. (See 1935 Census.) If the number of farm operators in the rural farm population listed in the Census of Occupations equals the total number of rural farms with occupied dwellings, there may be no overlapping. In California there appears to be none.

These figures may also suggest other possible errors in the Department of Agriculture figures and method of calculating net income from farm operations. For instance, it is probable that these workers living on farms and working in other industries drive automobiles to work and that more of the expense of running farm automobiles should be attributed to income from working off the farm and less as an expense chargeable to agricultural production.

It is not the purpose of this note to make estimates but simply to point out the significance of available census data that have not been utilized in making estimates of income to people living on farms. The 1930 Census data shows that for the whole United States, 1,010,429 males and 493,298 females, a total of 1,503,727 gainful workers in other industries than agriculture lived on rural farms. Expressed as a percentage of all the gainful workers (unpaid farm family labor included) living on rural farms these workers represented 10.8 percent of the males, 37.2 percent of the females, and 14.1 percent of the total. There are great differences between states and regions in these percentages. Massachusetts was highest for males with 31.5 percent and North Dakota lowest with 2.8 percent. Rhode Island was highest for females with 85.7 percent working in other industries and Mississippi the lowest with only 7.5 percent. For males and females combined Rhode Island was the highest with 40.4 percent of the gainful workers living on farms working in other industries than agriculture and Mississippi the lowest with only 5.4 percent.

If these data are used in making income estimates to people living on farms some adjustment has to be made for females working in "other domestic and personal services" since this census class includes the hired housekeepers and maids working on farms. Their wages do not increase the income of people living on farms even though they are classed as gainful workers in nonagricultural industries. The figures quoted above and those given below by regions were compiled by subtracting the workers listed as gainfully employed in agriculture from the total gainful workers living on rural farms and are not adjusted for females working as servants on farms.

GAINFUL WORKERS IN NONAGRICULTURAL INDUSTRIES LIVING ON RURAL FARMS APRIL 1, 1930

Geographic region	Number of workers in non-agricultural industries			Per cent of all gainful workers living on rural farms		
	Total	Male	Female	Total	Male	Female
New England	66,963	44,296	22,667	33.9	26.0	83.0
Middle Atlantic	181,005	127,346	53,659	29.0	22.9	80.1
East north central	293,532	205,078	88,454	18.8	14.2	72.1
West north central	187,365	98,618	88,747	10.7	6.1	68.1
South Atlantic	304,066	209,895	94,171	14.9	12.5	26.7
East south central	175,089	122,387	52,702	9.5	8.1	15.8
West south central	144,782	101,033	43,749	8.1	6.4	20.1
Mountain	57,626	34,185	23,441	14.6	9.5	68.0
Pacific	93,299	67,591	25,708	21.1	16.9	63.3
Total United States	1,503,727	1,010,429	493,298	14.1	10.8	37.2

Source of data: Data from 1930 Census of Population, Vol. III, parts 1 and 2.

These census figures should be of special interest to rural sociologists and people interested in population problems. Who are these workers? Are they mainly the older sons and daughters still living at home on the farm? Do they have dependents to support? Undoubtedly most of the

country school teachers and many lodgers and boarders are included in this group. An analysis of these figures by occupations and regions may explain some of the differences that writers have speculated about. Take New England, for example, and combine these figures with those for farm operators working for pay or income off the farm. In 1929 there were 55,877 or 44.7 percent of all the operators who worked off the farm an average of 142 days each, practically half-time work off the farm. When this is combined with 66,963 gainful workers in other industries living on farms it appears as if on the average each farm was supported by one worker in other industries.

If Dr. John D. Black in his recent article on "Agricultural Population in Relation to Agricultural Resources," in *The Annals*, November, 1936, had made use of these available data and also corrected his figures for gainful workers in agriculture not living on farms he might have had less trouble in trying to explain the conditions in New England; he would not have divided farm population by the census number of workers in agriculture, especially in California where most of the farm laborers do not live on farms, have only seasonal employment, and are not counted as part of the farm population. He states that "What lack of correlation still remains could all be explained in terms of errors in the data on net incomes, valuation of property, or numbers of workers on farms."[2] However, one may wonder if the errors account for the lack of correlation or for the the amount of correlation which he finds between series of statistics which do not include some of the highly important variables.

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NONFARM AND FARM EMPLOYMENT OF PERSONS LIVING ON FARMS

In the preceding note, Dr. Peterson makes the interesting suggestion that in estimating the amount of nonfarm employment and income of persons living on farms, the number of farm operators reported by the Bureau of the Census as working for pay or income off the farm may be combined with the number of gainful workers in other industries living on rural farms with only the possibility of a small amount of over-lapping. Careful study of the Census figures, however, gives rise to serious doubts as to the validity of this suggestion.

Census occupational classifications are made on the basis of the occupa-tion form which a person derives the largest income. For the 1,900,000 farm operators who reported two days or more of employment off the farm in 1929, a decision had to be made as to whether the farm or the outside job was the larger source of income. Perhaps a rough approxima-tion of the occupational classification could be made by assuming that farmers with 150 days or more of outside employment would be classed according to their outside occupation and those with less than 150 days of outside work would be classed as farmers. Exceptions to this in the two groups would tend to offset each other. According to the census, of those farm operators working two days or more off their farms, there

[2] Black, J. D. The Annals of the American Academy of Political and Social Sciences, Vol. 188, p. 211. November, 1936.

were 1,360,000 who worked less than 150 days and 540,000 who worked 150 days or more. This latter group would for the most part be double counted in the procedure suggested.

Certain minor qualifications of this statement as to the amount of overlapping are necessary. There were reported 165,000 farmers in the rural nonfarm population. Some of them doubtless are included among the 540,000 farmers with 150 days or more of employment off the farm. To this extent the estimate of the amount of double counting should be reduced. Also in 1929 there were 64,000 urban farm families. Probably a fairly large proportion of them worked 150 days or more at nonfarm jobs. This necessitates a further small deduction from the estimate of double counting. Another qualification arises from the fact that persons working 150 days or more off their farms may divide their time between two outside jobs and hence still have farming as their most important single source of income. It seems unlikely that this is quantitatively of much significance.[1]

A more serious error than that resulting from duplication arises if the 1,360,000 farm operators working less than 150 days off the farm are combined with the other industrial group and treated as though they were regular full-time workers in industry. Actually over 500,000 of them worked out less than 25 days and 500,000 more from 25 to 74 days. Thus over half of all farm operators working off their farms actually worked less than 75 days during the year, and hence should not be considered as regular industrial workers. Furthermore, off-the-farm labor as used here includes labor on other farms. The amount of such labor was not reported for 1929, but in 1934, 13 percent reported their outside work as agricultural and 15 percent made no report or were unclassified.

Using New England to illustrate the results of applying the suggested analysis. Dr. Peterson apparently combines the 56,000 farm operators with outside employment in 1929 with the 67,000 gainful workers in other industries living on rural farms, and comparing the result with the 125,000 farms reported for the same year, concludes that "on the average each farm was supported by one worker in other industries." There were 26,000 farm operators reporting 150 days or more of outside employment. Several thousand of these were probably included in the 15,000 urban farm families and the 5,000 rural nonfarm operators. The 30,000 farm operators with less than 150 days of outside employment probably do not represent the equivalent of more than 8,000 persons fully employed. Hence, the equivalent of three regular workers in nonfarm occupations for every four farms would be a liberal estimate.

Dr. Peterson suggests that in an article by Dr. John D. Black,[2] the data here discussed might have been advantageously used. Just how is not clear. In the article in question, the writer related farm wage rates and net farm income per worker in agriculture to land and capital goods

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[1] The suggestion that the amount of overlapping may be roughly estimated by checking the number of farm operators in the rural farm population against the number of rural farms with occupied dwellings, while ingenious, is subject to certain objections. It involves an estimate of the number of farms with occupied dwellings in 1930 on the basis of the number reported in 1935. Not only was a considerable increase in farms reported for this period, but also it is generally known that during the depression there was considerable reoccupation of abandoned farm dwellings. Furthermore, many farms have more than one operator as a result of partnerships and similar arrangements.

[2] "Agricultural Population in Relation to Agricultural Resources," *The Annals*, November, 1936.

used per worker. Income from nonfarm sources was not of primary concern. Neither was the fact that not all agricultural workers live on farms. Income from employment in agriculture and not total income of persons living on farms was under consideration. However, there are certain difficulties in the use of the number of persons gainfully employed in agriculture as a measure of the farm labor force. Some reduction should be made to allow for part-time work in other industries. This is pointed out by Dr. Black in *The Review of Economic Statistics*, May, 1936, p. 72, where a fuller discussion of this relationship may be found. If this reduction is made, however, an addition should be made to allow for the farm labor of persons whose principal source of income is nonfarm and who were accordingly not included among those classified as gainfully employed in agriculture. It might be assumed that these two adjustments would roughly offset one another. If such were the case, no adjustment would be necessary in the number of persons reported as gainfully employed in agriculture as a measure of the agricultural labor force.

Actually, however, there is some reason for believing that these two adjustments would not be of equal magnitude. Industry is characteristically organized on the basis of employing a given number of men on a regular fulltime basis. It does not like Agriculture provide a wide variety of tasks which can be worked at for a few hours each day, or for a few days, a few weeks, or a few months during the year. Consequently persons with regular jobs in industry and hence so classified as to occupation frequently find a small amount of farm work which they can do without interfering with their regular job. This may be either the operation of a small farm or work for wages on larger farms. On the other hand, persons who derive the major part of their income from agriculture do not as frequently have time enough left to hold regular pobs in industry. If this analysis is accurate, the greater portion of persons who divide their time between industry and agriculture are classified by the Census of Population in industrial occupations.[3] This being the case, the number of persons classified in agriculture is an understatement rather than an overstatement of the size of the farm labor force. The amount of understatement would tend to be greater in the more highly industrialized regions.

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THE QUALITY OF GRAIN CROPS

The purpose of this study is to examine the annual variations in the quality of crops grown in the Northwest and the reasons for such variations. The relationship of these quality variations to the rates of seasonal marketing for the respective crops and their influence on price relationship, in a broad way, have also been examined. The data on quality are the graded inspections at Minneapolis beginning with crops of 1920 and con-

[3] In a recent study of part-time farming in Southeastern United States with which the writer was connected, samples were taken of all persons who combined farming and industrial employment in any proportion. The great majority of the persons so included worked the same number of hours in industry as did persons working in the same industries and doing no farming. They also operated small farms on which production was chiefly for home use. In many cases, this production was great enough to include the establishment as a farm according to the Census definition. Hence the production would be included in Census figures on total agricultural output.

cluding with those of 1935, a period of 16 years. The crops included are spring wheat, corn, oats, barley and rye. The corn crop year is taken as November through October. All other crops are on a crop year basis of August through July.

Extent of Variation in Quality

The federal inspections of Minneapolis monthly receipts were totaled by grades[1] and the proportion of each grade to the total for all grades was computed. These percentages were then used as weights to compute an "average grade"[2] for the marketed crop for each crop year. These average grades are shown in Table 1.

TABLE 1. AVERAGE GRADES OF MARKETINGS OF 5 CROPS AT MINNEAPOLIS, 1920–1935

Crop Year	Spring Wheat	Corn	Oats	Barley	Rye
1920–21	3.0	3.2	3.0	4.3	2.1
1921–22	3.0	2.6	3.0	4.4	2.2
1922–23	1.6	2.6	3.0	3.9	1.2
1923–24	2.9	2.8	3.2	4.5	1.6
1924–25	1.7	5.1	3.2	4.1	1.9
1925–26	2.1	4.6	3.0	4.4	2.3
1926–27	2.3	4.2	3.3	4.6	2.8
1927–28	2.1	4.5	3.4	2.8	1.7
1928–29	1.8	3.8	3.6	3.2	2.6
1929–30	1.6	4.1	3.3	3.0	1.6
1930–31	2.2	3.5	3.2	2.9	1.7
1931–32	2.5	2.6	3.2	2.9	2.1
1932–33	1.9	2.4	3.1	2.7	1.8
1933–34	1.4	1.8	3.3	2.7	2.0
1934–35	1.6	3.0	3.8	2.5	2.2
1935–36	4.8	3.7	3.2	3.9	2.6

Spring Wheat showed the most marked variation over the period. Its average grade ranged from 1.4 in 1933 to a low of 4.8 for the 1935 crop year. It was relatively poor in quality in 1920, 1921, 1923, and 1935, while it attained high quality in 1929, 1933, and 1934. It showed considerable fluctuation from crop year to crop year. Fairly high quality characterized corn in 1921-1923, and again in 1931-1934. Relatively poor quality prevailed in 1924-1927. In sharp contrast to wheat and corn is the relative stability in the quality of oats. The average grade, except for 1934, never varied by more than 10 percent from the average grade for the 16 years. These minor fluctuations are in contrast to wheat and corn which varied frequently by 25-35 percent. Barley had two somewhat separate periods of quality. From 1920-25 the quality was relatively poor, with the average grade ranging around No. 4, while for the crops 1927-1934 higher quality is reflected in the average grade, which ranges around No. 3. Rye varied from the average to about the same extent as corn and barley.

Although these crops tended to vary considerably from each other in the behavior of their fluctuations there are some interesting similarities in their year to year changes. In 1921 four of the five crops were virtually of the same average quality as in 1920. In 1922 all improved over the preceding year except corn and oats, which were unchanged. In 1923 quality of all crops declined, wheat more sharply than the others. 1925

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[1] The federal inspection grades are #1 to #4 and Sample Grade for oats and rye, #1 to #5 and Sample Grade for wheat and barley, and #1 to #6 and Sample Grade for corn.
[2] In computing the "average grade" malting barley was not considered, principally because it was not graded as such until 1934.

showed declines for wheat, barley, and rye, and improvements for corn and oats. The 1926 crops all declined from 1925 excepting an improvement for corn. In 1929 all improved except corn, and in 1930 all but wheat. 1931 showed improvements in corn, barley and oats and declines for wheat and rye. In 1932 all crops improved, and in 1934 all declined but barley. Except for oats, all the 1935 crops declined sharply in quality, wheat especially so.

Rates of Marketing

Quality of crop might be expected to influence the rate of marketing in two ways, when crops are small and prices high producers would tend to market more of the lower grades, hence lowering the general level of quality, and when quality is high they would tend to hold back marketings, seasonally, in the expectation of better prices. Spring wheat was selected for an example because it is the more important cash crop of the producing area tributary to Minneapolis, and is a crop for which grade is of great importance.

The crop year average grades of spring wheat at Minneapolis were tested in relation to the magnitude of total Minneapolis receipts for crop years. The crop years 1931, 1933, 1934 and 1935, all with inspections totaling less than 30,000,000 bushels, had average grades ranging from 1.4 to 4.8. Against this may be placed the crops of 1922, 1924, 1925, 1927, 1928, all with inspections of over 60,000,000 bushels and having average grades from 1.6 to 2.1. The smaller crops appear to vary more in quality. But the average grade of the three small crops of 1931, 1933 and 1934 is virtually the same as that of the five large crops. On the basis of these data it appears that there is no relationship between size of crop marketed and average grade.

The effect of quality on the seasonal rate of marketing was examined by dividing the 16 crop years into four equal groups according to the rank of their average grades. For each group the monthly percentage rates of marketing were averaged. For the four years of highest quality, 1924, 1929, 1933, 1934, 52 percent of the marketings were made in the four months August through November, with 20 percent in May, June, and July. This is only a little more retarded marketing than any of the remaining three groups, which marketed on an average 56-58 percent in the first months and 13-15 percent in the last three months of the crop year.

One item might be mentioned in connection with these rates. The group with highest quality was marketed most heavily in August with 19 percent of total marketings, and then declined to 16 percent, 11 percent, 7 percent, etc., for September and on through the season. For the remaining three groups August received only 9 to 15 percent of the total marketings, while September marketings were 18-21 percent. If the September marketings tended clearly to increase at the expense of August marketings as quality declined there would appear to be some significance to the differences, but no such tendency stands out, and inasmuch as the averaging of four years into a group covers up some fairly wide differences within groups, no significance can be attached to the difference between the group of highest quality and the remainder.

The different grades of wheat appear to have about the same rate of marketing, with No. 1 tending to be marketed earliest and Sample Grade

latest. The rates for grade No. 1 were examined by years to see if there was any material difference in these when average grade of total marketings was high or low. For the four years 1922, 1924, 1933, 1934, when No. 1 was two-thirds or more of the total marketings, 51 percent of grade No. 1 was marketed in August-November. For the four years 1921, 1923, 1931, 1935, when No. 1 was less than one-fourth of the total, 66 percent of all marketings of this grade were inspected in August-November. Thus it appears that grade No. 1 tends to be marketed a little later when it is a relatively large part of the crop than when relatively small.

This study failed to disclose a definite indication of any close relationship between quality and seasonal rates of marketing. The differences in quality of crop are apparently of minor importance as compared with other factors in determining rates of marketing.

Climatic Factors and Quality

A study of fluctuations in quality of crops must obviously include some attempt to arrive at an identification of the underlying causes. Corn was selected for this study. Since the study must be based upon meteorological data it was indispensable that a crop be selected that could be studied from the state weather reports of some one state. Of all the crops marketed at Minneapolis, corn is the only one of which, for all practical purposes, the marketings were grown entirely in Minnesota.

Although the number of years included in the study was small correlation analysis was used. The dependent variable was the percentage of the corn marketings grading No. 3 or better. The most important independent variables appear to be: average June temperature; average May temperature; average May and June precipitation; and September precipitation. These four variables in a multiple correlation with the precent grading No. 3 or better resulted in a correlation of .96. The most important of these variables is the June temperature. The simple correlation for this factor with the dependent variable was $+.93$. It thus appears that good quality corn is in very large degree dependent upon high June temperatures. Average May temperature was related to the dependent variable by a simple correlation of $+.49$. Other studies have shown that corn yield is highly sensitive to temperature during a period approximating May 20 to June 20, and it appears from this study that quality is likewise most sensitive to temperature during this period. When the average of May and June precipitation is considered, relatively much less relationship is found with the dependent. Its influence is inverse upon quality. The fourth independent variable, September precipitation, was related by a simple correlation of $-.44$. Corn is graded down for moisture content, and it is during September that most of the filling of kernels occurs. A similar multiple correlation between the "average grade" and the four independent variables was substantially the same, being .97. The simple correlations show little difference.

A limiting factor in these correlations is the nature of the basic weather data used. The temperature and precipitation data were Minnesota state monthly averages and totals. No allowance was made for time distribution within months, or geographical distribution within the state, yet these are quite probably important factors in determining quality of marketed corn.

Prices and Quality

It would be ideal if variations in quality of crops could be shown to affect prices in definite ways. Some preliminary efforts were made in this study with that in mind. But such a task, for a limited segmant of the crop volume, is too complex to justify undertaking it. The total supplies, demand, transportation, surplus and deficit differences, and all the other numerous factors influencing national, and in some cases world, prices would have to be eliminated before the quality influences could be measured.

The study showed considerable variation in the quality of crops. For corn it appears to be largely the result of May and June temperature and September precipitation. Quality variations appear to have had very little influence upon the rates of marketing of wheat. Their influence upon price appeared to be too remote to be measured without more elaborate study.

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INDIANA ENUMERATIONS, UNITED STATES CENSUS AND ASSESSORS'

Workers in Agricultural Economics have more enumerations for study in 1937 than ever before. Township figures from the United States Census, detailed figures from Soil Conservation listings and measurements, and recent surveys of selected areas, are the new material available. Enumerations made by assessors have assumed new aspects as comparisons with the new material reveal unexpected differences.

Indiana assessors list crop acreages when they list property for taxation, on forms furnished by the Department of Agricultural Statistics in the Agricultural Experiment Station of Purdue University. The questions have not been changed since 1928, and little change has been made since 1924. Comparisons may be made with three United States census listings by counties, or aggregates of county totals. The crop reporting district was used as a unit in this study since it illustrates the differences found, and is large enough to avoid certain difficulties expected with small units. The assessors' enumeration expressed as a percentage of the same item in the United States census may reflect the degree of incompleteness of the assessors' work. However, the percentages change with the different items, and the common assumption is that the percentage of farm land is the best measure of incompleteness. Percentages for three census years are given in the accompanying table. If the percent of farm land for each year is taken as a measure of the completeness of the coverage of the area, then the wide differenc of the figures for other items from this percentage must be explained as due to other causes.

The variation in time of enumeration might make some difference. The censuses for 1925 and 1935 were taken as of January 1, while for 1930 the date was as of April 1. The actual listing was partly done ahead of the fixed date for 1925, and mostly within two months of the date in each year. The assessors' enumeration was made in each year in the seven weeks following March 1. It would seem doubtful if the remembrance of

crop acreages would change much in the short time elapsed, and at the season of the year involved. The acreage in farm is current but the crop acreages are for the previous season. The spread between percent of farm land enumerated and that of other acreage items is fully as great in 1929 as in the other years, yet for this year the two listings were actually made in part, at the same time. Another time element is the initial date for farm leases. In the state many date from March 1. Since the farm operator reports for the farm currently occupied, the census takers ask the questions of the man who grew the crops. The assessor must ask new tenants in many cases. It is quite possible that crop acreages of the previous years crops may not be indentifiable from crop residues. This is especially true of crops that may be utilized in different ways. It is particularly difficult to ascertain it clover acreage was harvested or grazed, if hay making is followed by grazing. If the informant lacks knowledge of the facts, the alleged information may be dissimilar in successive enumerations.

The results of inquiries with identical questions may differ greatly if the questions have different settings. The Indiana assessors have asked at times the same question on land in farms as the census. It was not accompanied by the questions on land use, in broad classifications, which the census uses. As a result there is reason to believe that some land not intensively used is omitted from the assessors' listing, while it is included in the census. This is noticeable in the west central and three southern districts. The census, with questions on livestock numbers, and production of livestock and of crops, secures the classification of some land in farms, which is omitted when acreages only are asked. These farms are usually rather small and the numbers of farms and average size of farms are more affected than total acreage in farms. The effect on acreage totals by districts is probably negligible, but for some smaller units cannot be ignored.

For some grain crops the assessors' questions ask "acreage harvested for grain." The census question asks "acreage cut for grain and threshed." Under Indiana conditions perhaps these questions would elicit the same answers if followed by an identical question on production. But only the census asks the question on production of grain. It is found almost without exception that for rye the assessors show relatively more acreage harvested than is listed in the census. For 1934 the northwest district showed the same sort of difference for wheat. Several counties reported more wheat acreage to the assessors than to the census takers. It happened that these counties suffered a severe chinch bug infestation just before wheat ripened, and the indicated loss of acreage from chinch bugs was practically the same as the excess above the census enumeration, which asked grain production along with acreage. Apparently the question on production emphasizes the distinction between "grown" and "harvested" in an important way in the case of crop failure or of utilization other than for grain. The extraordinary figures for oats in 1934 are probably due to the same quirk, since in that season many fields were not worth cutting, but no other crop was planted following the failure.

No matter how much care is used to make the printed questions comparable, results will vary with the administrative efficiency secured in getting uniformity of understanding among enumerators. The Census Bureau stresses this matter each year, as between areas under the same

administrative head. Comparison of such matters between successive census years is difficult, and is usually indirect, since otherwise it might seem personal. The instruction of Indiana assessors has always been limited to printed directions and circular letters. Consequently variation in the interpretation of the questions is not unusual. This is sometimes revealed in letters suggesting changes in the questions, or setting out individual interpretations. The curious percentages for cowpeas grown alone in 1924, in the eastern two-thirds of the state, are largely due to the listing of canning peas in the column for cowpeas, by assessors who

PERCENTAGE INDIANA ASSESSORS' ENUMERATION IS OF UNITED STATES CENSUS

| | | | | | Districts or Areas | | | | | |
Item	North West	North Central	North East	West Central	Central	East Central	South West	South Central	South East	State
					1924					
Farm Land	82	87	88	85	88	90	80	74	82	84
Crops Harvested	—	—	—	—	—	—	—	—	—	—
Corn	86	88	90	86	87	88	77	72	80	85
Wheat	84	90	90	85	89	92	91	80	87	88
Oats	89	87	90	92	87	88	96	83	92	89
Rye	87	93	83	110	107	135	153	131	100	100
Barley	68	70	79	39	61	94	98	77	115	73
Alfalfa Hay	81	93	92	77	68	86	71	50	78	83
Soybeans Grown Alone	76	98	95	89	91	97	74	88	133	89
Cowpeas Grown Alone	100	188	432	70	333	2966	75	119	193	86
Tobacco	—	—	—	162	114	54	63	54	75	70
					1929					
Farm Land	98	99	99	98	97	97	97	99	96	98
Crops Harvested	95	98	98	96	96	98	96	91	95	96
Corn	98	96	98	98	98	96	95	92	95	96
Wheat	99	100	101	96	98	98	104	99	99	99
Oats	102	101	103	107	103	101	119	117	146	105
Rye	106	117	107	111	125	136	116	110	118	116
Barley	87	99	110	162	109	140	239	134	192	108
Alfalfa Hay	95	107	96	90	88	88	88	91	102	96
Soybeans Grown Alone	107	141	132	118	116	111	121	117	118	119
Cowpeas Grown Alone	87	166	111	88	72	138	116	102	72	111
Tobacco	—	—	—	41	109	98	81	86	86	86
					1934					
Farm Land	91	93	93	86	93	95	87	81	92	90
Crops Harvested	92	92	92	88	94	95	86	84	90	91
Corn	95	93	93	88	93	95	85	84	90	91
Wheat	103	96	96	91	96	97	92	92	98	95
Oats	110	106	101	116	119	123	115	131	130	112
Rye	113	100	108	105	114	120	103	121	107	109
Barley	136	160	125	168	198	142	131	108	132	135
Alfalfa Hay	97	91	96	86	92	92	82	88	91	92
Soybeans Grown Alone	93	91	89	88	91	85	88	83	88	90
Cowpeas Grown Alone	65	95	173	79	110	103	87	91	81	86
Tobacco	—	—	—	69	121	160	83	77	88	88

really did not know cowpeas as a crop. The inclusion of sweet corn for canning with "corn harvested," despite specific wording of the question has been discovered in several counties through comparisons in connection with Agricultural Adjustment Administration programs. The question "Alfalfa cut for hay, acres" has been answered by giving the field area, multiplied by the number of cuttings taken, instead of the area on which the crop was grown. Where the acreage of the crop is increasing rapidly, such a mistake may escape detection.

Crops not commonly grown are sometimes poorly reported through failure of the enumerators to ask the questions consistently on every

farm. Indiana has only small acreages of barley and tobacco. In some townships these crops are important, and they are listed about as well as other crops. In neighboring townships where they are less frequently grown they may be overlooked. Assessors are usually local farmers and are likely to have knowledge of these unusual crops. They have a short list of questions as well. Census enumerators are chosen in various ways, from many occupations, and may not have local acquaintance. The assessors usually find more tobacco acreage in the central district than is reported in the census. This is attributed to their shorter list of questions, and their occupational interest in crops which are unusual for the locality. The west central district tobacco percentages would seem contradictory, since tobacco growers are few in number there. However the number of growers, and the tobacco acreage in this district, are so small that the omission of a single farm might upset the percentage relationship. More barley acreage is usually reported by the assessors than in the census. In 1924 barley was most common in the northern districts. In the last two census years more barley has been found in the southern districts, as growers have experimented with winter barley. This shift of the area has greatly increased the possibility that the crop might be grown on occasional farms in townships not previously showing the crop. Only the most consistent use of all questions can avoid omissions in such circumstances.

The list of differences in forms and practices which might result in discrepancies in successive enumerations could be prolonged. The variation in the percentage figures could be pointed out in more detail. This would not add to the fact illustrated in the tabular figures, that enumerations are not equally comparable in all items. The need of caution in trying to fit together enumerations made at different times, and by different organizations becomes quickly evident on trial. Possibly this showing may be useful to others, where expectations about the new material have not been realized.

<div align="right">MINER M. JUSTIN</div>

Purdue University

THE ECONOMIC PRODUCTION OF EGGS IN DELAWARE

With the premium which the consumer is willing to pay for eggs in the fall the date of hatch of pullets has become an important problem among commercial poultrymen. The problem is to get the highest production of large-sized eggs in the fall as is consistent with the system of management on the individual farms.

Through a poultry management study which was made in Delaware, data were collected which clarifies this problem. Data were collected on 115 commercial egg farms in Delaware for the three-year period 1931-33. The data were taken on an enterprise basis. That is, all items of expenses, receipts, and capital were separated according to the laying flock, rearing flock, and incubation. This method made it possible to study each enterprise separately and to determine costs and returns of egg production, pullets, and chicks. Hartly, Milford, and Selbyville, the three largest commercial egg producing areas in the state, were selected for the study. All three areas are located in the southern half of the state.

These areas are located within a range of approximately 80 to 135 miles from the Philadelphia market and about 175 to 225 miles from the New York City market. Most of the eggs are transported by truck and are delivered direct to the retailer. With the exception of two brown leghorn flocks all of the flocks in the study were white leghorns.

Rate of Egg Production and Date of Hatch

There was a close relation between the date of hatch of pullets and the rate of egg production. For the laying period from the date the pullets came into production through October 31 of the following year, the February-hatched pullets produced an average of 211 eggs per pullet, the March pullets 192 eggs, the April pullets 181 eggs, and the May pullets 169 eggs. This is a differential of 42 eggs per pullet in favor of the February-hatched pullets over the May pullets. This differential in number of eggs per pullet was due almost entirely to the longer period the February pullets were in production. The February pullets were in production 16 months as compared with 13 months for the May pullets. For the 12-month period, November 1 to October 31, there was only a slight difference in egg production according to date of hatch. This indicates that there was no inherent difference in the producing capacity of the pullets of the different date-of-hatch groups, but that the differential in egg production was due largely to the difference in the length of the laying period.

Seasonal Variation in Egg Production and Date of Hatch

The theory is held among many poultrymen that the earlier the pullets come into production the earlier their rate of production begins to decrease the fall of the following year. Apparently, the date of hatch has little influence in Delaware on the rate of production during the summer and fall of the following year. Regardless, of the date of hatch all of the groups of pullets declined at about the same rate in egg production during the summer and fall of the following season. The February pullets went into a fall molt in October with a declining rate of production and did not begin to regain their production rate until January. However, apparently due to the rest during the fall molt, the February pullets not only regained their former production rate but during the late winter and spring months they exceeded all other groups in rate of production. The March pullets did not go into a molt until December and regained the rate of production in January. The April pullets apparently had just enough fall molt to level off the increase in the rate of production in December and the production rate was again resumed in January. There was no break in the fall production of the May pullets. With the exception of the February pullets there was little difference in the production rates of the different groups after December. There were not enough January-hatched flocks to make a study of them possible.

The fall molt interfered decidedly with the production of the February pullets during the high-egg-price months. The percentage of the eggs produced during the high-egg-price months (September, October, November, and December of the first season, and September and October of the second season) was 28.6 percent for the February pullets, 35.7 percent for

the March pullets, 28.4 percent for the April pullets, and 23.6 percent for the May pullets. Although a smaller percentage of the eggs from the February pullets were produced in the high-egg-price months than for the March pullets, it will be shown later that this was more than offset by the fact that a larger percentage of the eggs from the February pullets fell in the large-egg grade during the high-egg-price season and by the fact that the February pullets had a higher production for the laying period than did the other groups.

Grade of Eggs and Date of Hatch

No eggs from the pullet flocks were classified in the peewee-egg grade after the fourth month the pullets were in production. None were classified in the small-egg grade after the fifth month. After the fifth month and for the remainder of the season, approximately 30 percent of the eggs fell into the medium-egg grade and approximately 70 percent fell into the large-egg grade. It is apparent that the early-hatched pullets produced an appreciably larger proportion of large-sized eggs during the high-egg-price season than did the late-hatched pullets.

Average Prices Paid for Eggs and Date of Hatch

The differential in egg prices between the different grades of eggs is much greater during September, October, November, and December than during the remainder of the year. The differential between the prices of large-sized and of medium-sized eggs in November was 13.2 cents per dozen, whereas the differential in prices between the same grades in May was 3.2 cents per dozen. The average price received per dozen eggs for the laying season was 31.1 cents for the February pullets, 30.7 cents for the March pullets, 27.3 cents for the April pullets, and 25.6 cents for the May pullets. This is a differential in the average price of eggs for the laying period of 5.5 cents per dozen in favor of the February pullets over the May pullets. This difference in price was due, in part, to the fact that the February pullets were in production during the whole of the high-egg-price period of the first season and during about one-half of the high-egg prices of the second season, whereas the May pullets were in production only about one-half of the high-egg-price period of the first season and, of course, during about one-half of the high-egg prices of the second season. This price differential was also due, in part, to the February pullets being in production earlier than the May pullets, and thus a larger proportion of the eggs falling in the large grade during the high-egg-price period.

The value of the eggs produced per pullet, for the laying season, was $5.47 for the February pullets, $4.91 for the March pullets, $4.10 for the April pullets, and $3.61 for the May pullets. This is a differential in value of eggs produced by the February pullets for the laying period of $1.86 per pullet over that of the May pullets.

Cost of Producing Eggs and Date of Hatch

The contention is common among Delaware poultrymen that it costs more to produce early-hatched pullets than it does late-hatched pullets. This study indicates that it cost 85 cents each to grow, to five months of

age, pullets hatched in February and March, and an equal amount to grow, to five months of age, pullets hatched in May and June. When it is considered that feed, labor, and cost of chicks constituted 79.1 percent of the cost of producing pullets it is evident that the many other individual items of cost are relatively unimportant. The average cost of fuel per pullet was 2.5 cents. The difference in the fuel cost between the early-hatched and the late-hatched pullets, therefore, is insignificant. The average cost of chicks for the early-hatched pullets was .5 cents per pullet greater than for the late-hatched pullets; however, the early-hatched cockerals brought 1.7 cents per pound more than the late-hatched cockerals. When all items of costs and returns were considered there was no difference in the cost of early and late-hatched pullets. This study indicates that the only significant difference in producing eggs from early-hatched and from late-hatched pullets was the cost of feed due to the longer period the early-hatched pullets were in production. Essentially there was no additional labor costs on most farms. So far as family labor and yearly hired labor were concerned, when there were no early-hatched pullets in production a larger proportion of the time was devoted to unproductive work. When all factors entering into costs were included the data indicated that there was no significant difference in the cost of producing eggs per dozen from the early-hatched pullets as compared with the late-hatched pullets.

Summarizing these data, the average price paid for eggs was 5.5 cents per dozen greater and the average value of eggs produced per pullet for the laying period was $1.86 greater for February-hatched pullets than for May pullets, and the cost of production per dozen eggs for the February pullets was no greater than for the May pullets. It is realized that management practices could influence these results. For example, some poultrymen are successful in raising February-hatched pullets without a fall molt, whereas other poultrymen have trouble with the fall molt with April-hatched pullets. Differences in mortality and in culling practices would have an influence. Incidentally, for the farms in reference there was no significant difference in the mortality rate or the culling practices according to date-of-hatch groups. However, it is thought that these data represent fairly accurately production, costs, and returns of Delaware commercial poultry flocks according to date of hatch of the pullets.

<div align="right">R. O. Bausman</div>

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THE NORMAL WHITE SHARE-CROPPER FAMILY WITH GROWN CHILDREN

This is a study of 97 normal cropper families in Mississippi with at least one child 19 years and over not in school.[1] The schedules were secured in 1934. This article gives a picture of the composition, location of the family members, the tenancy history of the family, the education of the

[1] By a normal family is meant a family with a husband, wife and children, but no step-parents or step-children. Other qualifications of these families were that (a) the husband and wife were reared on a farm and lived on a Mississippi farm located in unincorporated territory at the time their children (19 years and over) were in public school; (b) that the main occupation of the family must have been farming and the main cash crop cotton at that time; (c) that the family must have been a farm operator or cropper at the time of the study.

husband, wife and children, and the occupations of the children in these families.

The number of white share-cropper families eligible for a study of this type is not great, but such families are important, due to the fact that they contain so many children. These families had an average of 8.32 living members or about six children. The modal family had eight children. Thirty-three of the wives had not yet reached their 45th birthday, which meant, of course, that there would probably be other children born in those families.

While the average size of family was 8.32 members, the average number at home was only six; 2.32 members were away from home. Of those living at home the great majority were, of course, pre-school and school children. There were, however, 91 sons and 41 daughters at home who had left school. Fifty-nine of these sons and 39 daughters were unpaid family helpers. Thirty of these sons were farming independently or on definite financial terms; two were engaged in non-agricultural work. Only two married daughters lived at home.

The great majority of the husbands and wives were 40 to 60 years of age. However, there were more wives in the group under 40 years of age and more husbands in the group over 60 years of age. As the cropper farmer grows older, he finds it more difficult to secure a farm. Landlords prefer younger men. Several men in this study spoke of the difficulty they had met in finding a farm. Many times, the fact that they had done so was due to the number of grown children at home who could do the heavy work. The great majority of the children of these families were from 10 to 25 years of age.

This group of middle-aged cropper families included two classes: (1) the shiftless "ne'er-do-well," living in depths of debt and poverty with nothing left but hope; and (2) those who were croppers because of lack of business or farming ability or because of hard luck in general. Only 30 percent of the group had owned land, but three-fourths had owned their working equipment at some period in their career (Table 1). Two-thirds of the families generally operated two-mule farms. Only 12 of them had ever operated a larger farm.

TABLE 1. TENANCY HISTORY OF SHARE CROPPER FAMILIES

Tenancy history	Number
Owner and cropper	11
Owner, tenant and cropper	17
Tenant and cropper	45
Cropper only	24
Total	97

Many of the families had rotated from one community to another, from one county to another. Especially was this true of the cropper families in Sunflower County, which county is in the Yazoo-Mississippi Delta. None of the families in this county had been in the Delta longer than 15 years. Most of them had come from the poorer counties east of the Delta. Mobility of the family was often spoken of as a reason for the children's having so little formal education. "We went to the Delta and the children stopped school then and never did go back." "My children quit school when we

moved." Remarks such as these were frequently made by the parents in the families interviewed.

Of course, family mobility was not the only factor responsible for the limited schooling of the children in these cropper families. In the first place the croppers and their wives had very limited schooling themselves[2] and children with a great deal of formal education do not usually come from such homes. In only six of the 97 families had the husband or wife had any high school training. None had been to college. Indeed, 10 of the husbands and six of the wives in these families had never been to school. Many of those interviewed spoke of having "to quit school to work in the field."

The great majority of the children in these families who had left school had had only a few years of elementary schooling (Table 2). Many of those with high school training had not attended beyond the ninth grade. Only three sons and 17 daughters were high school graduates.

TABLE 2. FORMAL EDUCATION OF CHILDREN HAVING LEFT SCHOOL OF SHARE CROPPER FAMILIES

Formal education	Sons	Daughters
	Number	Number
8th grade and less	156	117
High school training	20	44
High school graduate	2	13
College training	0	4
College graduate or more	1	—
Total	179	178

One son and four daughters had been to college. The family of the son who was a college graduate were renters at the time their son finished high school. They were able to help him a little. However, he made most of his way doing odd jobs in the college which he attended. He also borrowed several hundred dollars from the Field Cooperative Association.[3] Three of the four daughters with college training were sisters. Their family were land-owners at the time they were in college. The eldest daughter was a member of the "Tomato Club." She saved enough from canning tomatoes to send herself to college two years. She taught school for a while, then became a home demonstration agent and helped send her two younger sisters to college.

The amount of schooling which these children had was influenced, of course, by economic conditions at home. Many of these families kept their children out of school to plow or to pick cotton, thereby increasing their family income, but decreasing the possibilities of greater income for their sons and daughters in the future. The children thus kept out of school fell behind in their studies. Many grew discouraged and dropped out. One occasionally found such notes as these in the school records of the children, "Did fine while in school. Present 44 days first term, 43 days next." "Capable of doing good work, but failed because of irregular attendance." Some of the sons and daughters, of course, quit school due to inability to learn. A number of them and a few of their parents did not see the value of an education.

[2] To get the schooling of the husbands and wives they were asked about subjects they had studied in school. History and geography indicated fourth grade or above; algebra and Latin that they had reached high school.

[3] An organization which lends money to worthy boys and girls without security.

The vast majority of sons and daughters out of school were following farm occupations or were married to men following farm occupations. (Table 3).

TABLE 3. OCCUPATIONS OF CHILDREN OF SHARE CROPPER FAMILIES

Occupation	Sons	Daughters	
		Classified by occupational status of husband	Classified by own occupational status
Per school	19	—	18
School	113	—	106
Farm	153	112	39
Non-Farm	24	16	8
Incapacitated	2	—	3
Total	311	128	174

Indeed, the occupational picture of sons is quite similar to that of daughters. About 86 percent of each group were farming and the remainder were engaged in nonfarm work. Forty-three percent of the sons who farmed were croppers, while 71 percent of the daughters married to farmers were married to croppers. Many of the sons assisting on the farm without cash compensation will doubtless become croppers. Only one son was a landowner and he, according to his mother, "married a farm." Eleven daughters were married to landowners. The husbands of the daughters were older than were the sons and consequently more of them had had an opportunity to acquire a farm. A few of them had inherited a farm. There were more sons assisting on the home farm than were daughters. This was due to the fact that daughters married younger, not to the fact that they more often sought gainful employment off the farm than sons. Only four single daughters were engaged in nonfarm work, while 35 single daughters were farm assistants in the homes of their families.

Relatively few of the sons, daughters or husbands of daughters followed nonfarm pursuits, and the majority who did were unskilled or semi-skilled wage earners. More of the husbands of daughters were skilled laborers than were sons, due to the fact that they were an older group. One son was a proprietor. Two daughters were engaged in professional work. One was a dietitian in a girl's school, the other a trained nurse. The daughter married to a professional man had finished high school, completed nurses training and nursed before her marriage. The son who was in professional work was a teacher. He was the only son who was a college graduate. Only two sons were managers, clerks and kindred workers and neither had followed this kind of work long. One was a life insurance agent, but stated that he could not make a living and was thinking of returning to farm work. The other clerked in a country store.

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As one steams up the Pearl River from Hongkong to Canton, one is impressed with the fact that the delta lands are farmed with a high degree of intensity, but that most of the uplands are lying idle. With all of the land hunger in South China, less than one sixth of the land is under cultivation. Most of the plateau land and the lower slopes are uncultivated. Land, level enough to be plowed with a tractor, is not being farmed. The rich, alluvial lands, however, constitute the basis of the most intensive agriculture in the world. Three crops are taken from the same land in one year.

The tenancy problem on the farm lands of South China is fully as serious as that of the cotton belt and the corn belt of the United States. Mr. Chen Han-Seng has given a detailed description of the tenancy situation in the provinces of Kwangtung, located in South China, with Canton as its capital city.

The material, on which the book is based, was secured through surveys and correspondents. All general statements for the province are therefore estimates. The book is not easy to read because it deals with an accumulation of details from small areas, and describes conditions unfamiliar to the Western World. Furthermore, the author sometimes gives way to emotional expressions which are meaningless without a basis of comparison. Nevertheless, this is a valuable book, because it gives quantitative sample data for a region for which census data do not exist.

Some of the interesting facts in the book are the following: About 60 percent of the land is cultivated by tenants; half of the peasants own no land. Others own part and lease part of the land they cultivate. Seven-twelfths of the leased land is owned by public agencies or corporations, of which about 96 percent is clan land. Five-twelfths of the leased land is owned by grain merchants, grocers, pawnbrokers, war lords, and other individuals.

Since 80 percent of the people are members of the clans and benefit from the income of the clan, tenants on clan lands may therefore have something in common with tenants leasing from relatives in the United States, yet the author is pessimistic on this point because of the presence of graft in the management of clan revenues.

The rent collected by the clans of Kwangtung amounts to thirty times the revenues from the annual land tax. Leases are for varying terms, from one to ten years. Clan leases are written. Oral agreements are common among private landlords. By custom, a tenant may remain indefinitely if he pays the rent. The payment of rent in kind is most prevalent. This may be a fixed amount of grain, or it may be a share of the crop. In any case, owing to the extreme land hunger in China, it is sure to be high—often amounting to 60 percent of the crop. On land used for cotton, fruit, vegetables and other cash crops, the rent is usually paid in cash.

It is a common practice for the clans and other large land owners to let the land in large blocks to agencies, which sublet to others. There may be two or three intermediary leases before getting down to the actual

cultivator of the soil. The rent paid by the tiller of the soil may be twice that received by the clan.

HENRY C. TAYLOR

Farm Foundation, Chicago

The Emergence of Human Culture, by Carl J. Warden. New York: The Macmillan Company. 1936. Pp. 176. $2.00

This brief essay on the origin of man's cultural characteristics and activities would have been briefer still had the writer not felt it necessary to unroll an epitomized panorama of geology, biology, organic evolution, and anthropology upon which to paint the rising phenomenon of human culture. Speaking as a comparative psychologist, the writer is convinced that the basic mental processes of ape and man are so strikingly similar that man is not unique on the mental side. Man's primary claim to distinction rests rather upon the fact that he alone possesses a genuine culture. The precise truth seems to be that both man and culture emerged from the animal level of existence at the same time.

The argument for this general viewpoint is one of the two or three main contributions of the text. The biological constitutes the foundation upon which the cultural superstructure is built. Culture is *sui generis,* and cannot be reduced to the biological level, however close their relationship. Moreover, as a second highlight of the essay, the writer holds that a large measure of social integration on the biological level antedates the emergence of culture. Strong social tendencies within the group serve as the natural organic supports of culture patterning; but one must not confuse the "biosocial" and the cultural orders. Biosocial characteristics, depending upon germinal variation, heredity, and natural selection, bring about social integration on the instinctive or biological level. The wide prevalence of some form of biosocial life among animals suggests that the social factor possesses a genuine survival value.

The processes of the cultural order contrast sharply with those of the biosocial order. The slow operations of organic evolution do not at all account for the patterns that arise and persist in the cultural realm. In fact, the basic mechanisms of culture, employed by the writer as the final criterion of the cultural order, are *invention, communication,* and *social habituation.* Invention and communication account for the rise and spread of cultural elements within the limits of one generation, while social habituation transmits these to later generations. So artifice, language, and social organization shall, as a unit, characterize culture.

The author employs the current doctrine of emergent evolution to describe the origin of culture. Not by gradations and continuity shall this system come into being, but by a leap, and emergence. As the living organism emerges from the nonliving level; as the "biosocial" order *emerges* from the sub-social; so the cultural order emerges from the biosocial. The dramatic emergence of culture was the release of social patterning from the tedious bondage of organic evolution.

A more detailed survey of insect societies, bird societies, mammal societies, brings to the writer the conclusion that their societal patterns are purely biosocial in character, never cultural. And yet some four or five million years ago, the emergence of man—the actual transition from the "humanoid" to the human level—took place, and with it, the emergence

of the cultural order. In response to social pressures in the anthropoid environment, structural changes had arisen which made for a more and more complex biosocial life, and when sufficiently advanced they—postural, manual, vocal, and cortical adaptations—became the natural supports of the emerging cultural order.

With the coming of modern man, *Homo Sapiens,* the social progress of mankind has been dominated by cultural rather than biosocial trends. The evolution of culture through the various ages has proceeded with many and diverse trends; but will continued cultural evolution mean continued social progress for mankind? Dogmatists of several breeds answer, "Yes." However, biological evolution is out of court here, for culture goes its own way. It *may be* that social progress lies ahead, but it is certainly not inevitable as the naïve optimists contend. Wells's criterion of the progress of civilization, viz., the continued adequacy of its service to "the health, wealth, and happiness of mankind" seems good enough to our author for the purpose of examining the certainty of social progress. Here is the critical truth: the health, wealth, and happiness of mankind at any period is a function of the degree of harmony existing between the ends of life and the social means at hand. Progress, then, would be possible only when a convergent trend exists between man's capacity and aptitude for culture, on the one hand, and the growing complexity of the cultural order on the other hand. But the writer sees no evidence of such a general trend. While culture is tending to be more and more complex, organic human nature tends to remain stationary. Human happiness, moreover, seems "gone with the wind" in the rapid onward pace of human culture. This would seem to weigh the odds rather heavily against unlimited progress, which turns out thus to be a mere dogma. A few danger signals are noted among the trends of civilization: extreme urbanization; differential birth rate in favor of less desirable strains: the dysgenic nature of war; the germinal technological trend of agriculture to rely upon chemistry to furnish at first a substitute for outdoor acreage and, then, by synthetic foods eventually eliminating farm and farmer for all time; large-scale unemployment; concentration of wealth and power; regimentation and loss of freedom; ceaseless struggle, by a swifter and swifter pace, for unattainable good. In conclusion, the writer sees no support to the doctrine of a manifest *racial* destiny. The pressing need of the times is for large-scale engineering in the field of social control, international in scope, because the economic and social balance of all nations is needful to the maintenance of balance in any single nation.

Two or three readings, at least, are necessary to yield the full content of this compendious concentrate. *The Emergence of Human Culture* is a modern example of the peaceable intrusion into several remote fields of thought by a scientist seeking to elucidate a single concept in his own field.

CHARLES JOSIAH GALPIN

Washington, D.C.

Central and Local Finance in Germany and England, by Mabel Newcomer. New York: Columbia University Press. 1937. Pp. 381. $3.50.

This study of state and local finance in Germany and England includes enough recent historical development of the subject to facilitate an understanding of the present situation. The emphasis is on local finance with

some material concerning central finance to explain the revenues received by local units from the state or central governments. The organization and administration of central and local governments are covered only in a limited way.

The author includes, for both Germany and England, a wealth of information concerning the system of financing local government, the problems which have been encountered, and the attempts which have been made to meet these problems. The first half of the book is devoted to the situation in Germany, in which the movement has been toward a centralized tax system with numerous revenues collected by the central government and shared with the smaller units within whose boundaries they are collected. The author recognizes the pressure for the distribution of such revenues in accordance with financial need. The last half of the book describes the situation in England, in which the movement has been in the direction of grants-in-aid which take into account in some degree both variations in need and in taxpaying ability. In both countries the financial pressure on small local units has been relieved to some extent by the transfer of functions to larger units.

The text includes 29 tables and 2 charts, and the Appendix 6 charts and 17 tables covering some of the more important data upon which the analysis is based. In the development of the study the author includes references to the available reports bearing on the different phases of the problem. The inclusion in the discussion of numerous details of rates, percentages, and amounts, many of which are based on studies to which references are made rather than upon statistical material included in the book, does not make the text an easy one to read. The procedure followed, however, may have merit as a middle ground between the two extremes of absence of factual material and of expansion to include the basic data.

The book represents a study of the actual problems of central-local finance in Germany and England, and is in no sense limited to a theoretical discussion of the subject. At the same time the author does not avoid suggesting possible solutions to the problems described. The factual presentation and analysis results in a valuable digest of material which would otherwise not be available to most students of public finance in this country.

Throughout the study the author recognizes adequately one factor often neglected in such an analysis, namely, the importance from the financial point of view of the equalization achieved by wider areas of support. The concluding chapter includes by far the best comprehensive statement of the problem of central-local fiscal relationships which has come to the attention of the reviewer.

M. P. CATHERWOOD

Cornell University

The Economics of Consumption, by Charles S. Wyand. New York: The Macmillan Company. 1937. Pp. ix, 565. $3.50.

Advocates of reform will like this book, but orthodox economists will be irritated. The opening three chapters develop the thesis so frequently expounded in marketing texts that in the early development of the country scarcity was so apparent that there was no problem in selling goods, but

that by 1900 productive capacity became sufficiently large so that selling goods rather than producing them became the major problem. As a result there developed restrictions in the way of monopolies, increased advertising and selling pressure and closer attention to influencing the consumer. Profits are ceasing to be a proper guiding and driving force for society since they are so often procured in directions that run counter to social welfare. This viewpoint results in an unusual definition of the consumer as—"any person whose production as measured by his current income is less than current expenditures for the satisfaction of his personal wants" (p. 106). Such a classification would include some three-fifths of the population of the United States who, the author concludes, "would, if wise, concentrate their economic activity upon their consuming function."

In such a situation consumer choices and their direction become matters of concern. Ten chapters or about three-fifths of the book are in consequence devoted to an examination of this problem. Emphasis is given to the multitude of factors influencing these choices. The discussion covers such a range as psychological factors, physical and economic determinants, advertising, standards, the consumer's judicial position, and even cooperation. The general conclusion drawn from this examination is that we need some revision and control in these choice making forces. "At the present time, choice patterns are molded by the producer and the merchant. But these entrepreneurial efforts to adjust demand to supply have failed because emphasis has been constantly placed upon the expansion of profit margins without consideration of the consumer's welfare. Were equivalent effort spent in molding demand in terms of the buyer's needs and limitations of the productive system, choice patterns would become more stable, industry less erratic, and the product of enterprise not only profitable but usable. Manipulation of choice must continue, but with different motivation and on the basis of a consumer oriented system of values. The only alternative is economic chaos" (p. 440).

The author sees little hope for consumer betterment in the usual proposals or suggested agencies and implies that a general revision of our economic philosophy is needed. The federal agencies have failed, and "For the present at least, the consumer has little to hope for in the way of effective cooperation from any agency of the federal government" (p. 348). Education is likewise under indictment, "The effect of this educative process on consumers' choice can not be overstated. It justifies the status quo. It confirms the average student's illusions with regard to his dominant economic role and interests. And it fails utterly to prepare him for adjustment to an economic system in which the sole hope for the satisfaction of his wants lies in most cases in the efficient use of his income. As in the case of other public agencies, the net effect is usually to the consumers' disadvantage" (p. 357). The Consumers Cooperative movement is thought to offer little since, "It is difficult to see, therefore, how the cooperative movement can lead to the elimination of our existing economic difficulties so long as its exponents reject the eventual establishment of a cooperative society and cling to traditions which are in a large measure responsible for prevailing evils" (p. 423). Thus far standardization has had little value, because, "In no instance has any agency, public or private, established an effective set of specifications that can be intelligently used by the consumer to insure the purchase of quality merchandise" (p.

312). The author appears to see little prospect of the immediate reorientation of viewpoint and economic reorganization he envisages as essential, but offers two suggestions in this direction, a more militant and vigorous action on the part of consumers and the organization of a fearless and well staffed Department of the Consumer in the Federal Government. The enabling act for such a department by Mr. Cox is included as an appendix. Three chapters toward the close are devoted to levels of living (actual expenditures), standards of living, (aspirations, traditions and attitudes of respective groups) and norms of living (what families ought to consume).

This book is a stimulating and important addition to the literature in the field of consumption. If the footnote references may be taken as a criterion an immense amount of research has underlain its preparation. The discussion is well fortified with examples and specific cases and the footnote references are an indispensable bibliography of the enormous range of materials dealing with the consumer.

WARREN C. WAITE

University of Minnesota

World Immigration, by Maurice R. Davie. New York: The Macmillan Company. 1936. Pp. x, 588. $3.75.

Upon reading through this book one finds that the title, broad as it is, is relatively modest in scope compared to the work itself, for what Professor Davie has apparently attempted is a treatise covering all or most of the manifold aspects of international migration. From his account one sees migration not merely as a demographic process, a transfer of population from one political unit to another, but as a complex social phenomenon, creating problems such as those of acculturation, assimilation, race mixture and racial antagonisms, and possessing economic, political, social and biological ramifications. Among the topics covered in the less than six hundred pages of this book are the following: Immigrant contributions to the population of the United States; The history of migration into the United States; Immigrant backgrounds; Immigration to the British Dominions and Latin America; Demographic and other characteristics of immigrants; The problems of the immigrant-receiving country; The problems of adjustment faced by the first and second generation immigrants.

In addition there are special sections on the immigration policies of the United States, administrative problems in the enforcement of immigration laws, social factors in assimilation, the Americanization movement, and naturalization in the United States. The book in fact assumes the form of a compendium of information on international migration and its repercussions. What is lost thereby in unity is more than gained in comprehensiveness.

Beginning with more or less conventional introductory definitions, the author proceeds to a brief historical account of immigration during the colonial period, this section including comment on the conditions of immigration and characterization of the principal immigrant groups. Next follows the major section which occupies nearly half of the book, an account of emigration from Northern and Western Europe, from Southern and Eastern Europe, from Asia and from American countries other than

the United States. The principal emphasis throughout is upon emigration to the United States but other movements are considered, in particular those to the British Dominions and Latin America. The treatment here is excellent essential facts, dates and figures are given but are woven into an interesting narrative account of the various streams of migration to the United States. For Professor Davie the story of immigration does not commence at Ellis Island. His account begins with a characterization of the socio-economic and political environment of the migrant groups, details and the special conjunctures which "push" them away from home or "pull" them to America, reports their occupational and geographical distribution, their reception and adjustment upon arrival. The treatment of Jewish migration appears to be particularly adequate.

The remaining half of the book takes up the demographic description of migrants to the United States and their effects upon American society, the history of the immigration policy of the United States, details of the administration and enforcement of our immigration laws, the problems of immigrant adjustment, and so forth as noted above. Special topics include the illegal entry of aliens, the deportation of aliens, the immigrant community in the United States, the adoption by immigrants of Anglo-Saxon names, and a long list of other topics.

Among the special excellences of this book are, first, its emphasis upon the importance of immigrant backgrounds; second, its treatment of the relation of motivation to the type of migrant; third, its accounts of the adjustment and assimilation of the migrants to their new environment; and finally, the extensive classified bibliographies at the end of each chapter. It appears on the whole to be very well adapted for use as a text-book on migration.

<div style="text-align: right">E. P. HUTCHINSON</div>

Harvard University

The Theory of the Land Question, by George Raymond Geiger. New York: The Macmillan Company. 1936. Pp. 225. $2.00.

This book was written as a challenge to the etiology of the land problem currently presented by the majority of present-day economists, and particularly land economists. The author has a penetrating familiarity with single tax or land value taxation theory and is the author of a previous book, *The Philosophy of Henry George,* pertinent to this topic. His field is philosophy rather than economics.

To the heterodoxy of modern economics the author offers this alternative: "The land question appears to offer a clue to that synthesis which had always haunted economic philosophers, i.e., a unified explanation that would reconcile the diverse appearances of injustice and inequality in all economic systems. . . . There is an overwhelming possibility that economic woes transcend any particular technology. If capitalistic and noncapitalistic regimes both succumb to the same ills, the suggestion inevitably presents itself that the etiology must investigate causes that underlie any specialized economic technique . . . the land question may contain a key indicating an identity and interconnection among what are ordinarily believed to be separate economic manifestations." pp. 216-17.

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The lively style and pungent thrusts of the book give it a drive that few

discussions on land value taxation and single tax theory have possessed. The theses of the individual chapters are by no means unfamiliar.

Chapter I is an attempt to return to first principles that an advanced technology has in part hidden. Despite degrees of remoteness in dependence, all classes of society depend on land and all production starts from it. "Economic life is raised upon land as a pyramid on its base. Would it not seem plausible, then, that the frantic quest for economic remedies pay some attention to the land problem?" p. 14.

In the second chapter the argument is carried forward by making the point that "Just as with land value, rent arises gratuitously when demand forces into use marginal land or necessitates more intensive cultivation of superior land. Rent is determined by a process of relationship, and by nothing intrinsic such as cost of production. . . . Thus land rent is unearned because it is an income for which no service is contributed." pp. 52-53.

The thesis of the third chapter: that land and capital are deeply different, while centering on a raging economic controversy, appears to be a side issue if the thesis of the first chapter is accepted as established. If land rent is indeed unearned because it is income for which no service is contributed, the basis for land value taxation is established apart from any consideration as to whether land or capital arise from different sources and respond to different forces. This chapter, assuming its point established, does no more, therefore, than add a bit of weight to the points established in Chapter II.

In the fourth chapter dealing with the historical aspects of the land question a basis is found in a hurried review of the history of land tenure for the belief that "Those who own land control those who do not" and exploit them. "The decline of the manor and feudalism meant only, as someone has said, that the exploitation of subjugated peasants by the lords was now carried out not by means of forced labor but by making them into rent payers." p. 172.

In Chapter V the heart of the book is reached in the discussion of the socialization of land rent. Land value taxation accords elegantly with accepted canons of taxation. (1) ". . . Taxes on production are a drain on production. . . . Can this be said of land value taxation? Land value is not an industry-produced value. Its creation is not an automatic and gratuitous social act, and its disposition in terms of taxation can have no negative effect upon the processes that produce wealth. In fact, the tax on land values acts as a definite stimulant to production." p. 192. . . . (2) "But a land value tax rests upon the consumer as easily as it does upon the producer." p. 193 . . . (3) "Still a third test of taxation soundness is certainty. Now, all that can be mentioned in this connection is that land cannot be concealed and that its value can be determined with relative ease." p. 194.

Some attention also is paid to the evils of land speculation. The conclusion of the chapter and, in many respects of the book, are that, "Rent socialization through taxation seeks to adjust the distributive processes by channelizing the flow of social income into social repositories and by leaving inviolate private and earned income." p. 216.

Land value or single tax doctrine is an old one leading back to the physiocrats and enjoying a great revival in the day of Henry George. The doctrine has at times had great popularity and the writings of Henry

George were among the most widely translated of his time. The doctrine itself has as strong a theoretical foundation as most other socio-economic theories and probably arouses even less controversy than its great competitor in the field of social and economic reform, the Marxian thesis. Yet while Marxist doctrines have tremendous vitality and gain an enormous following land value taxation appears to be gaining little if any ground.

When one asks oneself why land value taxation translates itself so hesitantly into action programs, the real answer appears to be that it fails persistently to gain a great following. Among the great groups from which adherents might be drawn are (1) the laboring class, (2) the contrasting capitalist class, (3) the farmer, and (4) the intellectuals.

Why does not the single tax appeal to the laboring class? Professor Geiger himself, though not intentionally, supplies the answer to the question. The laborer's dependence upon land in an industrial and advanced technological civilization is obscured by the intricacies of modern social organization. The laborer feels that the distributive share to which he must constantly and desperately assert his claim is unearned profit of the capitalist rather than rent, and he is in no position to distinguish the difference between "capital" and "land capital." The schism between the laborer and the single taxer is made deeper also by the fact that the typical land value taxationist refuses wholeheartedly to join the current labor movements embodied in socialism and communism. Professor Geiger is careful to explain that land value taxation is a reform eminently suited for use within the structure of modern regulated capitalism. He states, "... it may be suggested that the socialization of land rent seems to afford an unusually neat compromise between the untenable extremes of both "individualism" and "socialism." The method of land value taxation offers something radically different from land nationalization or agrarian communism with which it is so often mistakenly associated." pp. 186-187. The socialists, indeed, feel far more kindly toward land value taxation than the capitalists and it is the land value taxationists that repel the socialists who would perhaps welcome them as allies if they would do, as do the socialists, make land value taxation only a single plank in a much larger platform.

The capitalist class cares little for the single tax doctrine for obvious reasons. If anyone gains by the right of continuous land ownership it is the capitalist or owning class. To promote land value taxation would, at least in an immediate sense, be counter to their interests. Fascists, the extremists of the capitalist class, are never single taxers.

Farmers are owners, laborers, and consumers all in one. Their judgments on social policy are weighty because they represent less nearly than do those of either labor or capital a singleness of viewpoint. Farmers appear, however, to be no more interested in land value taxation than either of the two preceding groups. The reason is in part circumstantial. Agricultural economics research has demonstrated rather impressively during the recent decade and a half that farmers have been called upon to pay in taxes a greater share of their income than the general run of urban people. Farm taxes are levied as a tax on property particularly real estate and, hence, land. From 1920 on farmers organized vigorously to present their case through the Department of Agriculture and the Experiment Stations in an effort to reduce the weight of taxes upon their shoulders. Their great

drive was against the property tax and particularly the tax on real estate. At present, therefore, they are strongly conditioned against any extension of taxes on land and would almost certainly greet land value taxation with a most unusual suspicion that it was merely an attempt to reimpose and extend the aged use of the property tax as the major fiscal device of localities and states.

In part, the indifference or outright antagonism of the farmers lies much deeper. They have been the great owners of land and to them more than to most classes have gone the unearned increments (and decrements) in land values. There is no reason to suppose that a generation so newly sprung from pioneer speculators is likely to relinquish fully the prospect for income, whether earned or unearned, arising from increase in land values. Neither is it likely that the rest of the community will insist that these gains be taken away from them.

A not insignificant group from among the intellectuals is constantly captivated by single tax theory but the endorsement of it fails at all times to be unanimous by a wide margin. Again Professor Geiger supplies the answer to the question why. Among the intellectuals and among the most able of the economists are many who repudiate land value taxation from diverse points of view. One has only to mention the illustrious names that Professor Geiger himself quotes as opponents in one way or another of the theses that he has presented in this little book. Among them are Davenport, Fetter, Ely, Veblen, and others.

The book under review was written with the apparent hope that it might rekindle in the minds, particularly of the intellectuals, a more glowing support for this type of reform. The book deserves to be read.

CONRAD H. HAMMAR

University of Missouri

World Trade and Its Future, by Sir Arthur Salter. Philadelphia: University of Pennsylvania Press. 1936. Pp. 101. $1.50.

In this book, which consists of five lectures delivered at Swarthmore College in the spring of 1936, the author does an excellent job of presenting the salient features of world trade before and after the World War, during the depression, and at the present time. In the last chapter he presents a forecast of the "future form and pattern of international trade." The discussion is clear, concise, and cogent, a combination rarely encountered in dissertations on international trade.

In the first chapter Sir Arthur points out that the large international trade of prewar days grew up under a system of laissez faire which, in spite of its great complexity, worked remarkably well. The system was characterized by generally stable monetary conditions and low or moderate barriers to international trade. It functioned through more or less automatic adjustments resulting from rising and falling prices, changes in central bank interest rates, and relatively small transfers of gold between countries.

Sir Arthur emphasizes the fact that this prewar system was suited to the conditions of the time. Among such conditions were growing populations throughout the world, increasing industrialization and specialization, and a relatively free movement of surplus populations from the older to

the newer countries. He calls particular attention, however, to the fact that the prewar system postulated free competition between economic units and that the development of large monopolistic organizations and combines in the period immediately preceding the War did not augur well for the proper functioning of the system.

The second chapter discusses the situation after the War. But before taking up this period the author refers briefly to the significance of the War period itself. The World War put a stop to the functioning of the laissez-faire system of the prewar period. Currencies were no longer stable, barriers to trade were formidable to the point of complete embargoes, and governments intervened actively in all phases of economic activity.

After the War an attempt was made to reestablish international trade on the prewar basis. As regards the reestablishment of a financial system involving widespread adherence to the gold standard this attempt was, temporarily, successful. But the development of home industries under the "protection" of war conditions together with the general nationalistic psychologies generated by the War resulted in much higher barriers to world trade than had prevailed in the prewar period. The difficulties arising out of higher trade barriers might have been overcome had it not been for the fact that the vast borrowings of the belligerent countries during and immediately after the War made necessary huge transfers of funds from the debtor to the creditor countries in addition to the transfers on account of current international trade. If these debts were to have been paid, it would have been necessary early in the postwar period for the creditor countries to admit imports of goods and services freely in excess of their exports. But creditor countries, as a matter of fact, increased barriers to trade largely because of pressure from particular industries for additional protection in the home markets.

In the third chapter Sir Arthur traces developments of international trade during the period of the world economic depression. He finds two developments of particular importance from the standpoint of forecasting the future system of world trade, namely "first the growth of new restrictions upon imports as a result of currency instability and currency fears; and secondly the building of a new 'exchange clearing' system out of these currency restrictions, for the purpose of increasing external trade, not with the world as a whole, but with selected countries."

In the fourth chapter the author discusses the principal factors in the present situation as they relate to the future form of international trade. Among the factors mentioned are: first, the increasing participation of governments in economic enterprise; second, the great progress in industrial technique which, on the one hand, tends to encourage external trade through larger scale production but, on the other hand, makes it easier for the less advanced countries "to attain a tolerable standard of living with only a small dependence on imports"; and, third, the slowing down of the rate of population growth. Sir Arthur also discusses in this chapter certain general questions relating to currency systems, balances of trade and payments, and foreign investments, all of which are considered to be "major factors of a more or less permanent character, which are likely to determine the conditions under which international trade will take place for many years ahead of us. . . ." Finally, the author summarizes the principal impediments to trade at the present time, notably tariffs, quotas, and

exchange restrictions. With regard to quotas, Sir Arthur distinguishes between those which arise from currency difficulties, which should be temporary, and those which are related to domestic economic programs, which may be permanent.

We come now to the last and most significant chapter entitled "A Policy for World Trade in the Future." It is well to have in mind at this point the fundamental thesis of the author, namely that the change in basic conditions affecting world trade, as compared with the conditions existing under the prewar situation, necessarily involves a change in the system of world trade itself.

In building this new system the author considers of first importance the removal of uncertainties as to currency relationships. He suggests in this connection a limited stabilization apparently along the line of the tripartite agreement between the United States, Great Britain, and France, which was actually reached some months after the lectures were delivered.

Sir Arthur next suggests that governments should not return to the laissez-faire practice of letting trade balances and balances of payments look after themselves but should rather plan in broad outline the main items on both sides of the balance of payments account and then put into effect national policies which will carry out the objectives of such plans. This would include direct steps to limit or direct the flow of capital. He considers that intelligent national planning along this line could more readily be fitted into an international pattern which would result in larger world trade than the present procedure of each individual country attempting to secure "rights to more payments from abroad than it makes."

With respect to questions of tariff or other import restrictions the author advocates "that each country should consider its Trade Balance and its national economy as a whole, that it should form a general conception of national policy from the point of view of its own interests, and that it should then have a national enquiry to consider, whether on this basis changes in its tariffs are desired." If such an enquiry showed that certain exports were desirable an allowance would be made for an appropriate volume of imports to pay for such exports. "It would consider what classes of imports it was most desirable for the country to buy, and would then advocate a tariff system which would positively encourage these imports." In deciding on the nature of imports consideration would be given to the natural advantages of the country for producing particular products. "And this would give a basis for bargaining with other countries, on the principle of complimentary exchange, each country producing that for which its natural resources or aptitudes best qualify it—the true foundation of all international trade."

With respect to such bargaining Sir Arthur suggests that negotiations "will have the best chance of success if they are in the first instance bilateral, or plurilateral as distinct from universal, and conducted under conditions which enable the negotiating countries to give advantages to each other which they will not necessarily extend to the rest of the world." In other words, bargaining would not be on the basis of strict unconditional most-favored-nation treatment. The solution does not lie, however, in abandoning entirely the principle of most-favored-nation treatment but rather in extending "considerably the conditions under which exceptions . . . are customarily allowed."

There can be little quarrel with this conclusion. The unconditional most-favored-nation clause in its strictest form is applicable only to a world trade system in which tariffs form the predominant type of trade restriction. It is obviously not fully applicable with respect to quotas, exchange restrictions, barter arrangements and other trade controls that have arisen in recent years.

In this connection Sir Arthur intimates that the reciprocal trade agreements program of the United States cannot proceed very far on its present basis. But this, to the present reviewer, does not necessarily follow. As a matter of fact, the United States has shown in a number of ways that it is willing to make reasonable modifications in the most-favored-nation principle in connection with its trade agreements program. If it had insisted upon the application of the unconditional most-favored-nation clause without exceptions, there would, for instance, have been no trade agreements with Canada, France, the Netherlands, and a number of other countries with which agreements actually have been reached. The conclusion of agreements with countries which operate quota systems would be impossible under a strict interpretation of unconditional most-favored-nation treatment. In other words, the United States has approached the question of trade agreement negotiations realistically and has taken account of the change in conditions since prewar years on which Sir Arthur places so much emphasis. There may not be, in fact, so much difference between the present American policy with respect to the negotiation of trade agreements and the ideas of Sir Arthur as the latter seems to think.

Whatever may be the situation in this respect there is one point in Sir Arthur's program which would seem to be less adaptable to American conditions than the procedure that is now being followed. This relates to Sir Arthur's suggestion of a national enquiry for the purpose of ascertaining among other things the items on which import duties or other restrictions could be reduced. This is put forward apparently as a preliminary to the negotiation of trade agreements. While this might be theoretically the best line of approach, it is difficult to see just how it could be carried out in the United States when it is considered how deeply the idea of "protection" is imbedded in the national psychology. It would appear to be much more practicable to proceed along the present line, which while attacking the problem more or less piecemeal nevertheless does involve careful consideration of the significance of individual import duties from the national point of view.

In general the present reviewer finds himself in sympathy with the views of the author as to the likely "form and pattern of future world trade." But it seems probable that there is more than the one way suggested by Sir Arthur for the government of a democracy to shape its commercial policies in line with present-day conditions. The important thing is to recognize that conditions have changed.

L. A. WHEELER

Bureau of Agricultural Economics

Rich Land—Poor Land, by Stuart Chase. New York: McGraw-Hill. 1936. Pp. 350. $2.50.

Rich Land—Poor Land, a study of waste in the natural resources of America is a typical Chase book, well written, and full of facts. It is not

a technical book, although technicians will be inspired. The layman, regardless of station, will see a vivid picture of his role in America's rapid destruction.

Chapter headings herald the worth-whileness of the book. It begins in Chapter I with a description of the country between the two oceans and then swings on through the Primeval Continent from Plymouth Rock to Ducktown, discussing crop land, grass land, forest land, great basins, with serious erosion, then planning with nature, and at last concluding with the twenty-ninth chapter, what to do under the title of "To Save the Continent."

The North American continent is the hero of the book. Mr. Chase says:

The continent has been set upon by thieves and footpads and most foully hurt and beaten. Now at long last its patience is exhausted and it turns on its tormentors. The boy and the mountainside got on well together. Perhaps, when enough people understand what has been done, Americans and the broad land which so graciously offered them a home may learn to get on together.

It is a plea for Americans to realize their heritage which mostly is still with us but which cannot endure longer unless earnestly and unitedly we plan. Mr. Chase thinks it can be saved.

An equilibrium must be determined and it must be planned. The first step is to understand what nature demands as a minimum; the next step is to calculate the highest possible living standards consistent therewith; the third step is to arouse the American people to bring the two together.

Mr. Henry Ford is quoted in this connection as follows:

The land supports life. Industry helps man to make the land support him. When industry ceases to do that and supplants the land, and the land is forgotten and man turns to the machine for sustenance, we find that we do not live off the work of our hands but off the fruits of the land.

In Chapter VI entitled "Crop Lands" the author explains how North America is growing restless under the assault of the white-faced animal upon its surface. He points out that here and there where cropping practices have stimulated erosion swift and terrible reprisals have been taken. He says the rice growers of the Philippines have been terracing for a thousand years and quotes Jefferson's sound advice given in 1813 from his own Virginia farm.

Our county is hilly and we have been in the habit of plowing in straight rows, whether up or down hill . . . and our soil was all rapidly running into the rivers. We now plow horizontally, following the curvature of the hills and hollows on dead level. . . . Every furrow thus acts as a reservoir to receive and retain the water, all of which goes to the benefit of the growing plant instead of running off into the stream.

The two words "Dust Bowl" is a rather new phrase to many of us, but those who have lived in the southwest know its terrible significance.

When grass goes, erosion begins. . . . What the wind leaves, the water takes.

Through persistent over-grazing and burning, the land of the Dust Bowl represents one of the tragedies of our time.

Few but meaningful are the words of the author in respect to forest lands. He emphasizes the great tragedy of waste in America by contrasting it with Germany and Sweden. According to Chase:

The best thing that ever happened to the American forest was the depression. The total cut fell from thirty-seven billion board feet in 1929 to ten billion in 1932.

May the American public read this brief reference to forestry waste and appreciate to the point of reaction the great losses.

The two chapters, one on Upstream and the one on Downstream give a new emphasis to upstream erosion control. We have thought so much of downstream control that we have failed to appreciate the upstream, the more important, because of its great influence on downstreams.

Mr. Chase urges us to plan with nature. He pleads for united, probably national, planning and inspires progressive thought when he says:

Every human being is forced to make plans, but these do not concern us here. Our concern is rather with the community. How shall its base of natural resources be maintained? How shall its vitality be preserved? How shall its levels of living be raised? How shall it live more fully and its children more fully still? How shall the threatened menace to its livelihood be averted?

The last chapter entitled, "To Save the Continent" is one of the best sections. The following paragraph is pertinent:

The Great Wheel turns. A continent is situs, a place to live, and so far more than a bread factory. People do not make continents; continents made a people. The age-long strength of Russia is due to her latitude, climate, resources and sweep. The strength of England is due to her position in the sea. The strength of our nation is due to the continent of North America. It has molded us, nourished us, fed its abundant vitality into our veins. We are its children, lost and homeless without its strong arms about us. Shall we destroy it?

The answer is, No.

W. L. BURLISON and A. L. LANG

University of Illinois

Markets and Men, by J. W. F. Rowe. New York: The Macmillan Company. 1936. Pp. 259. $2.00.

This study contains two major divisions. In the first part, there is an historical description of the development of artificial control schemes for coffee, wheat, sugar, cotton, tin and rubber. In the second part, important principles concerning the application of different kinds of control schemes under varying conditions are formulated.

As a background for the general reader, individual commodities are discussed. Consideration is given to cultural practices, market outlets, economic importance, price, and the plan and operation of the various restriction and valorization schemes in specific industries.

Having presented this background material, the author critically examines the causes for the initiation and adoption of control measures. He points out that many of the commodities involved were already in trouble before the depression, and that technical and economic forces brought about production changes in raw materials so rapidly that the financial, occupational, and labor changes were unable to keep pace. The dislocations

in economic, social and political structure were such as to force governments to take steps to reduce the impact of the depression in particular industries.

In Chapter IX, general consideration is given to the whole issue of artificial control as compared to open competition or laissez-faire systems. He discusses the practical and theoretical application of restrictive measures whose purposes were to reduce the actual volume of production and the valorization schemes whose purposes were to equalize the supply without attempting to control long-time average price.

Conclusions in regard to the economic soundness of restriction are: (1) "Restriction is economically unsound as a means of meeting permanent decline in the demand for the product of a particular industry during times of general prosperity . . . but in times of general depression, it may be justifiable until general recovery is under way. (2) Restriction is economically sound, as a means of meeting temporary decline in the demand for the product of a particular industry, both during the times of general prosperity and of general depression, provided that no substantial portion of the productive capacity is in an advanced stage of obsolescence, this proviso being of special importance if there is a tendency toward excess capacity before the demand declines. (3) Restriction can at no time be a cure for trouble arising from excess capacity, unless the productive technique is virtually stationary, a condition which is now-a-days most unlikely to be fulfilled."

The author believes restriction impracticable in industries that are top-heavy with excess productive capacity, until laissez-faire policy has operated long enough to remove the excess high-cost capacity. Valorization schemes for single crops cannot be operated mechanically and elements of speculation are almost inevitable. As better statistical information becomes available, the effect of speculation may be lessened and valorization prove advantageous, but care must be exercised against optimism by management toward future prices, and surplus stocks should be disposed of regardless of cost when things are not going well.

Finally, there is no clear cut choice between artificial control and laissez-faire policy, since the merits of either system depend upon the kind of control and the particular circumstances. The author believes that, in any event, the sooner the proper function of government in this new form of industrial organization is learned and understood, the better it will be for producers, consumers and the government itself.

The writing of *Markets and Men* was completed in September, 1935, nearly two years ago. The demand for raw material in certain industries was extremely low at that time and the author spoke abstractly of excess production capacities. In view of recent developments in the wheat, copper and rubber industries, it might be well to raise the question as to what is excess capacity, and how can it be measured? The sections in the latter part of the book which discuss governmental attitude in high and low cost countries, excess-production capacities, and the merchant-speculator regime vs. artificial control are particularly noteworthy.

JOHN B. ROBERTS

University of Kentucky

Pioneering in Agriculture, by T. A. Atkeson and Mary Meek Atkeson. New York: Orange Judd. 1937. Pp. 219. $2.50.

This is an account of the life of Thomas Clark Atkeson, written by

Doctor Atkeson and his daughter, Mary Meek Atkeson. During the latter years of his life Doctor Atkeson was the Washington Legislative Representative of the National Grange. Mr. Atkeson was born in a log house on the banks of the Great Kanawha River, near the town of Buffalo, Virginia—now West Virginia—in 1852. He died in 1935 at the age of 83 years.

With a few brief intermissions Mr. Atkeson lived on the home farm until 1896. In the first seven chapters of the book a very interesting and readable account is given of life on a farm during the Civil War and the following years. Emphasis is given to the self-sufficing nature of farming in those days. Although his father operated a big farm in the days before the Civil War the statement is made that he never handled over $500 in a year. From 1896 to 1910 he served as Dean of the College of Agriculture at the University of West Virginia. During this period he writes: "I taught several courses in rural economics long before the subject was recognized in most of the agricultural colleges of the country." In 1898 he established the first Farmers' Week at the University. In 1871 he had entered the University of West Virginia to study agriculture, but found little or no agriculture taught.

Doctor Atkeson had been an active Grange worker since 1880. He served eight years as Overseer, and six years on the Executive Committee of the National Grange. He began his work as Legislative Representative for the National Grange in 1919 and served in that capacity until he resigned in 1927. Chapter XII is devoted to interesting observations relating to his experiences and impressions in Washington. It is stated that the bill establishing a marketing section in the Department of Agriculture was written in his office. In Chapter XIII he reflects upon agricultural changes, the agricultural situation since 1930 and makes some suggestions for its improvement. Regarding the agricultural program of the Roosevelt Administration he writes: "I have tried to think them through and to relate them to some general policy for betterment of agriculture, but they are too much for me." As to what the future holds for agriculture, Doctor Atkeson does not profess to know, but he closed with the statement: "I am hoping that in some way it may be better."

This account of Doctor Atkeson's life well deserves the title "Pioneering in Agriculture," because he pioneered in the field of improved farm practices, he pioneered in the field of agricultural education, he pioneered in th field of farm organization work and he pioneered in the field of national farm legislation.

J. I. FALCONER

Ohio State University

POPULATION RESEARCH

The Advisory Committee of the Social Science Research Council feels the advisability of redefining the research needs for large elements in our rural population as listed below. It is becoming increasingly apparent that former research concerning the problems of these people is not adapted to their needs considering the new forces which have come into their life. These people are neither urban nor predominantly commercial farmers. Their problems have been accentuated by recent social changes in communication, transportation, the depression, and national agrarian policies. The general characteristics of this group are that they are non-commercial and more or less handicapped by low and precarious incomes. The group includes among others:

a. A large number of semi-self-sufficing and low-cash income farmers in all regions.
b. The farmers on some of what is known as marginal land such as the mountains and the Piedmont.
c. Much of the open country non-farm population.
d. A part of the rural negroes, the share croppers, the migratory farm and woods laborers, and persons of similar types.
e. A good share of the isolated tidewater people.
f. A large part of the so-called Spanish-American population.

This group of population is to a large extent the seed bed for the American people in that fertility rates of 1930 were between 150 to 175 per cent of reproduction as contrasted with 75 per cent for the large cities, 95 per cent for the towns, and 125 per cent for the commercialized farmers.

A redirection of research concerning the livelihood and needs of these people and their role in American culture may be needed as follows:

a. In the form of new projects.
b. In the form of continuing previous researches and redirecting them.
c. In the inclusion of their problems in specialized studies of the physical and economic characteristics of American Agriculture.

Former general assumptions concerning these people may represent unrealistic approaches to their problems.

A realistic reappraisal of the problems of these people is needed in terms of their human contributions to American life and in terms of their needs for which "remedies" and "improvements" can be realized.

In order to achieve these purposes a committee consisting of Carle C. Zimmerman, Lewis C. Gray, S. T. Dana, and T. W. Schultz has been set up to do certain exploratory work in this field.

I. G. DAVIS

Connecticut State College

REPORT OF THE COMMITTEE ON ASSOCIATION POLICY OF THE AMERICAN FARM ECONOMIC ASSOCIATION

At its annual business meeting on December 30, 1935, on recommendation of its Executive Committee, the Association authorized the President-elect to appoint a committee to formulate recommendations having to do with long-time policy aspects of the Association, and to report to the Executive Committee.

President Davis appointed the following:

Active Members: Asher Hobson (Wis.), Chairman, T. W. Schultz (Iowa), Leland Spencer (Cornell).

Consulting Members: A. G. Black (BAE), I. G. Davis (Conn.), Paul Eke (Idaho), M. J. B. Ezekiel (USDA), F. F. Hill (FCA), G. W. Forster (N.C.), L. P. Gabbard (Texas), O. B. Jesness (Minn.), O. R. Johnson (Mo.), E. G. Nourse (Brookings), H. B. Price (Ky.), R. R. Renne (Mont.), W. A. Schoenfeld (Ore.), G. F. Warren (Cornell), F. P. Weaver (Pa.), H. R. Wellman (Calif.), C. C. Zimmerman (Harvard).

The active members of the committee formulated an outline of suggested topics to be considered. This was submitted to the consulting members and to the members of the Executive Committee. In soliciting their views it was emphasized:

The outline is not intended as being all-inclusive. Modify and add to it as you see fit. Do not hesitate to include a discussion of any proposals which you believe merit consideration. We want a free exchange of opinion.

With the aid of the replies received, the active members of the committee formulated a preliminary draft report which was circulated to the consulting members and to the members of the Executive Committee. With their comments at hand, a final draft was prepared. At its meeting on December 28, 1936, the Executive Committee approved this draft with minor modifications and instructed the Chairman of the Policy Committee to present it to the annual business meeting on December 30.

1. *Association Objectives*

It is recommended that Article II of the constitution[1] be amended to read as follows:

Object.—The objects of this Association shall be to promote effective investigation and free discussion of topics and issues in agricultural economics, and higher standards of accomplishment in research, teaching, and extension in this field, by fostering study, writing, and contacts which contribute to these ends.

It is one thing to state the objectives of the organization, but quite another to provide the machinery for accomplishing them in satisfactory measure. The remainder of this report is given over to a discussion of ways and means.

At present the Association activities consist of annual meetings, publications, and committee work. Each of these deserves separate consideration.

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[1] Article II now reads: "*Object.*—The object of this Association shall be to promote the investigation and teaching of farm management and other economic questions pertaining to agriculture."

2. *Annual Meetings*

The annual meeting furnishes an important medium of contact among members and a forum for free discussion. Its proceedings fill over one-half the available space in the JOURNAL OF FARM ECONOMICS. Beyond question, the program of the annual meeting dominates the Association's activities. Out of it comes most of the materials that provide a basis for judging the Association's scholarly attainments.

The constitution places the responsibility for arranging the program of the annual meetings on the Executive Committee. In practice the primary responsibility has rested, and should rest upon the President. High standards of Association accomplishment are dependent, in no small measure, upon the ability with which he discharges this major function. In order to facilitate the work of program building, it is proposed that the President be Chairman of a Program Committee including the Vice-Presidents of the Association and such other members as the President may appoint.

It is recommended that the Program Committee give due consideration to (a) the fundamental and applied phases of agricultural economics, (b) the varied interests represented in the Association, (c) the desirability of giving qualified younger workers opportunity to participate, and (d) the advisability of having no one assigned two or more major places on the same annual program. It is also recommended that prospective participants in the programs of the annual meetings be notified in advance that, "their papers may be published as a whole, in part, or only in summary."

3. *Publications*

The Association's one publication is the JOURNAL OF FARM ECONOMICS. It is, at present, limited to 800 pages for the four quarterly issues. More than half of this space has been devoted to the publication of the proceedings of the annual meeting. A number of reasons suggest the advisability of publishing the proceedings in a single volume.

1. They would become available more promptly. Some of the papers do not now appear until the August issue.
2. Appearance in a single volume would, in all probability, facilitate reference to the proceedings.
3. Such an arrangement would leave more space in the JOURNAL for contributions originating independently of the annual meeting.
4. It would enlarge the sphere of influence of the Association.

On the other hand, the publication of the proceedings separately would increase printing costs by about fifty percent. Also of major importance is the fact that such a change would add greatly to the work required of the Editor. It is felt that he should not be asked to contribute to the Association the time and attention necessary to edit the proceedings promptly and to fill four other issues of the JOURNAL with acceptable material originating independently of the annual meeting.

As a transition step the following arrangements are recommended:[2]

1. That the page limit for a volume of the JOURNAL be extended from not to exceed 800 pages to not to exceed 1,000 pages.

[2] These two recommendations were adopted at the annual business meeting on December 30, 1936.

2. That the February number be looked upon as "The Proceedings" number, and be enlarged to not to exceed 400 pages.

It is recommended that the Editor exercise full discretion as to the number of pages used within the prescribed limits, in the distribution of the proceedings over more than the February issue, and in the acceptance of all material for the JOURNAL.

It is agreed that the JOURNAL should contain articles of high quality not arising from programs of annual meetings. It is obviously desirable to encourage contributions from the younger agricultural economists, and at the same time to keep the JOURNAL on a high level of scholarly attainment. The harmonizing of these two ideals calls for no small amount of editorial skill and tact.

When the financial status of the Association permits, the Executive Committee may well consider the publication of an occasional monograph containing the results of committee study, or prepared under the direction of the Association through some other arrangement.

The above recommendations call for no changes in the constitution.

4. *Committees*

The constitution prescribes that all committees shall be appointed by the Executive Committee. It is suggested that committees be appointed by the President, with the approval of the Executive Committee. Such an arrangement conforms with the Association's practice.

The constitution provides for three standing committees—research, teaching and extension. In recent years these committees have been inactive. It is recommended that this constitutional provision be deleted as obsolete.

At present the Association has the following special committees:

1. Farm Credit
2. Census of Agriculture
3. Association Policy
4. Editorial Practice (Warren-Clark Resolution)
5. Research in Marketing
6. Recruiting and Training of Personnel in Agricultural Economics

It is highly desirable that more definite arrangements be made with reference to such committees. Upon the appointment of a special committee, the President of the Association and the chairman of the committee should agree upon a memorandum of understanding with respect to the scope, functions, and general plan of work of the committee. This memorandum should be subject to modification. A copy of it, and subsequent changes therein, should be filed with the Secretary-Treasurer. The continuation of any committee beyond March 31 of each year should be at the discretion of the President acting in consultation with the Executive Committee.

It is recommended that the Association maintain a standing committee on investment policy with respect to Association funds, such committee to consist of three members including the Secretary-Treasurer and to report to the Executive Committee. This committee may well be appointed annually, but the nature of its task suggests that the tenure of members should ordinarily be for longer periods.

In line with the above suggestions, it is recommended that Article IV of the constitution[3] be amended to read as follows:

Organization.—The officers shall be a President, two Vice-Presidents, and a Secretary-Treasurer, who shall be elected for one year, and who shall serve until their successors shall qualify. In case of incapacity of the President to act, the Vice-President receiving the highest number of votes shall act as President.

The Executive Committee shall consist of the active officers, and the latest three past Presidents. It shall appoint annually the Editor of the JOURNAL OF FARM ECONOMICS. It may adopt rules and regulations for the conduct of its business not inconsistent with the constitution of the Association, or with rules adopted at the annual meeting. It shall act as a committee on time and place of meetings, and perform such other duties as the Association shall delegate to it.

There shall be a standing committee on investment policy with respect to Association funds. The Secretary-Treasurer shall be a member of this committee. The actions of this committee shall be subject at all times to review by the Executive Committee.

The President, Vice-Presidents, and such other members as the President may appoint shall constitute a committee on the preparation of a program for the annual meeting. The President shall act as chairman of this committee.

Special committees may be appointed in accordance with the needs of the Association. Special committees and the investment committee shall be appointed by the President with the approval of the Executive Committee.

The additional sentence in the first paragraph is designed to repair an oversight in the present article. The reduction in the number of past Presidents on the Executive Committee is recommended by experience. The other changes are in line with recommendations discussed above.

If Article IV is amended to include the suggested provision for a Program Committee, Article VI[4] should be changed to read thus:

Meeting.—There shall be held an annual meeting of the Association, and such other meetings as the Executive Committee may determine. Notice of meetings shall be mailed to each member at least four weeks in advance.

5. *Election of Officers*

It is recommended that a new Article V be added to the constitution (succeeding articles to be renumbered accordingly) embodying the action of the Association with respect to election of officers. The recommended article reads:

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[3] Article IV now reads: *"Organization.*—The officers shall be a President, two Vice-Presidents, and a Secretary-Treasurer, who shall be elected for one year, and who shall serve until their successors shall qualify.

The Executive Committee shall consist of the active officers, and the latest four past Presidents, and shall have power of appointing committees, selecting time and places of meeting, and of bringing to the attention of the members any matter which in their judgment should be considered by the Association.

There shall be three standing committees appointed annually by the Executive Committee. One of these committees shall consider the lines of investigation best adapted to the needs of the work of farm economics at the present time and shall suggest to various investigators plans of correlation and cooperation in the work. It shall be the duty of this committee to collect, as far as possible from investigators, the lines of work to be carried out each year. The second committee shall investigate the methods of lecture and laboratory work in farm economics and make suggestions to members of the Association and to Colleges intending to organize courses in farm economics. It shall be the duty of the third committee to report on extension work in farm economics."

[4] Article VI now reads: *"Meeting.*—There shall be held an annual meeting of the Association, the arrangements and program to be made by the Executive Committee. Notice of such meeting shall be mailed to each member at least four weeks in advance."

The President and the two preceding past Presidents shall constitute a nominating committee. The President shall act as chairman of the committee.

Two nominations shall be made for each office except for Secrétary-Treasurer, for which one nomination shall be presented. No person who has served a term as President shall be nominated for that office or eligible for election to it.

Not later than December 1 of each year, the Secretary-Treasurer shall mail a ballot to each member of the Association who has paid dues for the current year, not including corporations, libraries, or other institutions. Said ballot shall provide for a vote for each elective officer. For each office the ballot shall contain one blank line. A brief biographical sketch of each nominee shall be included.

The ballot shall be enclosed in an envelope which shall be marked on the outside as follows:

"Ballot for Officers of the American Farm Economic Association. This ballot shall reach the Secretary-Treasurer not later than the first day of the annual meeting.

"Name ————. Your name is required for checking with the list of members. Ballots will be opened by the tellers in such a manner as to preserve the secrecy of the ballot."

The sealed ballots shall be opened by tellers at the annual meeting, and they shall report at the annual business meeting. The persons receiving a majority of votes for the offices of President and Secretary-Treasurer shall be declared elected. The two canidates receiving the highest number of votes for the offices of Vice-President shall be declared elected.

If no one has received a majority of the votes cast for the offices of President and Secretary-Treasurer, the position shall be filled by ballot at the annual business meeting from the two receiving the largest number of votes for the office. A similar procedure shall be followed in case of tie for the office of Vice-President.

6. *Finances*

Much diversity of opinion exists with respect to the financial policy of the Association. Considerable doubt was expressed both as to the advisability of seeking endowments or building up more than moderate reserves. These opinions seemed to be based upon the fear that such funds would alienate membership control of the Association, or lead the Association to become bureaucratic. While such opinions were not in the majority, they were sufficiently prevalent to merit consideration.

The financial status of the Association is not clearly understood by a majority of the members. The Association now has a reserve fund of around $16,000. It has been possible to accumulate this fund by operating on a basis which calls for contribution of all efforts involved in running the organization. The clerical assistance necessary to operate the offices of Editor, Secretary-Treasurer, and President are contributed. The current income of the Association is barely sufficient to defray the cost of clerical hire were it added to present expenditures. The recommended enlargement of the JOURNAL, will materially cut down allocations to reserves.

It is recommended that the Association seek to become self-supporting from the standpoint of clerical assistance, and to that end the present policy of accumulating reserve funds be continued until income from reserves will substantially cover the cost of the clerical assistance now contributed to the Association.

The loads on the offices of Editor and Secretary-Treasurer are not light.

As the activities of the Association grow, these become increasingly heavier. Some believe that the Association should look forward to the time when the offices may be combined in charge of a paid officer. This has been done by the American Statistical Association. The American Economic Association is attempting to formulate plans to the same end.[5] For the near future, it is not suggested that the Association plan for such a move or undertake materially to enlarge its functions.

It is recommended, however, that plans be made for financing within a reasonable period, the publication of a somewhat enlarged JOURNAL and the employment of necessary clerical hire involved in the usual operations of the Association as now conducted.

Respectfully submitted,
(Signed) ASHER HOBSON
Chairman, Committee on
Association Policy

December 30, 1936

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[5] The American Economic Association paid $8,735 to its staff members in 1935. For the same year the salaries and wages for the American Statistical Association amounted to $10,505.

NEWS ITEMS

G. F. Warren, Vice-President of the International Conference of Agricultural Economists, who acted as teller reports that 44 of the 48 paid-up members of the Conference voted for Council members with the following results: "The three receiving the highest number of ballots were: C. E. Ladd, 29; H. C. M. Case, 26; Asher Hobson, 24. Since each of these received a majority of all votes cast they are elected as members of the Council."

The Tenth Annual Meeting of the New England Institute of Cooperation was held at the University of Maine, Orono, Maine, on June 16, 17, and 18, 1937. The Officers of the Institute are: Chairman—W. A. Munson, Massachusetts State College; Secretary-Treasurer—C. H. Merchant, University of Maine.

At the annual meeting of the Atlantic States Division of the National Association of Marketing Officials held at Washington, D.C., April 26-27 Mr. H. A. Dwinnell, of the Vermont Bureau of Markets was elected President of the Division, and Mr. George E. Prince, of the South Carolina Division of Markets was elected Secretary.

Clemson Agricultural College at the dedication of its new agricultural building, W. W. Long Agricultural Building, May 12, conferred the degree of Doctor of Science on Assistant Secretary of Agriculture Harry L. Brown, on Chester Davis, member of the Board of Governors of the Federal Reserve System, on Arthur W. Palmer, agricultural commissioner, Foreign Agricultural Service, and on Dr. Robert W. Webb, in charge of cotton utility and standards research work, Bureau of Agricultural Economics.

Mr. Reuben Brigham has been appointed Assistant Director of Extension Work in the U. S. Department of Agriculture, effective May 1.

Mr. W. F. Callander, for many years chairman of the Crop Reporting Board, U. S. Department of Agriculture, prior to appointment in September 1935 as assistant administrator and later also comptroller of the AAA, has returned to the Bureau of Agricultural Economics and has assumed the leadership of the Division of Crop and Livestock Estimates, during the absence of Mr. Joseph A. Becker, who is on extended leave due to illness.

Mr. C. L. Forsling has been appointed Assistant Chief Forester in charge of all research activities of the Forest Service, U. S.

Department of Agriculture. Mr. Forsling entered the Forest Service in 1915; since 1935 he has been Director of the Appalachian Forest Experiment Station with headquarters at Asheville, North Carolina.

Mr. Kenneth H. Myers is now with the Soil Conservation Service and is located at Manhattan, Kansas.

Mr. E. C. Paxton has been designated agricultural statistician in charge of the office of the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, at Phoenix, Arizona. Mr. Paxton was in charge of the Kansas office of the Division for 16 years. For about three years Mr. Paxton served as agricultural commissioner in the Foreign Agricultural Service, covering Australia and New Zealand, with headquarters at Sidney, Australia. Since 1933 he has been liaison officer between the Division of Crop and Livestock Estimates and the Wheat Production section, AAA. Mr. M. R. Wells will continue at the Phoenix office as assistant.

Mr. W. D. Termohlen, Chief of the Poultry Section, Agricultural Adjustment Administration, was selected as secretary of the interdepartmental committee that is to represent the Government in arranging for the Seventh World Poultry Congress to be held in the United States in the summer of 1939. A Poultry Industries Committee will share responsibilities for the arrangements. Previous World Poultry Congresses have been held in Holland, Spain, Canada, England, Italy, and Germany.

Agricultural Annex is the name given to the new building recently completed at the corner of 12th and C Sts. S.W., Washington, D.C. and now occupied by the Division of Cotton Marketing, Hay Feed and Seed Division, and the Wool Section of the Live Stock Meats and Wool Division, Bureau of Agricultural Economics. The building has more than 75 offices and laboratories, and provides storage space for large quantities of cotton, hay, and wool under conditions in which fire hazard has been reduced to the minimum. Special attention was paid to providing the best possible natural lighting for grading and classification work. On the block in which the former Standardization Building used by these divisions for the last ten years stood, a new annex for the Bureau of Engraving and Printing is being constructed.